MONTHLY WEATHER REVIEW.

JANUARY, 1895.

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INTRODUCTION.

The REVIEW for January, 1895, is based on reports from 3,046 stations occupied by regular and voluntary observers. These reports are classified as follows: 149 reports from Weather Bureau stations; 36 reports from U. S. Army post surgeons; 2,205 monthly reports from State Weather Service and voluntary observers; 31 reports from Canadian stations; 283 reports through the Southern Pacific Railway Company; 525 marine reports through the cooperation of the Hydrographic Office, Navy Department, and "New York Herald Weather Service;" monthly reports from 17 U. S. Life-Saving stations; monthly reports from local services established in all States and Territories; and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe, but for the present month and unless otherwise specifically noted, the text and the statistical tables are furnished by the Division of Records and Meteorological Data, in charge of Mr. A. J. Henry, acting chief of that division.

CHARACTERISTICS OF THE WEATHER FOR JANUARY, 1895.

No specially marked features were noted during the month. There was an absence of high winds and destructive gales on the Atlantic coast, but the Lake region was visited by severe gales on two occasions.

The month was generally cold and stormy in the interior, and the cold was also rather more severe in the Southern States than usual.

Further details for each State and Territory will be found under the head of general weather conditions as reported by State Weather Services.

ATMOSPHERIC PRESSURE.

[*In inches and hundredths.*]

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers not reduced to standard gravity and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), during January, 1895, is shown by isobars on Chart II. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border. This Chart also gives the so-called resultant wind directions for this month, based on the data given in Table IX of this REVIEW.

Numerical values of pressure are given in Tables I and V, from which the details heretofore published under this section may be drawn.

HIGH AREAS.

Ten areas of high pressure are platted on Chart IV. In general these originated in the British Possessions north of Montana, and entered the United States at some point on our northern boundary between W. 97° and W. 115°.

But two areas of high pressure passed below the thirty-fifth parallel during the month, the general course being southeastward until about the fortieth parallel, thence northeastward to the Canadian Maritime Provinces. The usual details of the individual paths are given below.

I.—Was central in the west Gulf States on December 31, 1894. On the morning of the 1st it appeared over the east Gulf States and Tennessee, and moved thence northeasterly and practically disappeared on the evening of the 3d. Temperatures below freezing were reported throughout Mississippi, Alabama, Georgia, and northern Florida on the morning of the 1st.

II.—On the a. m. map of the 2d pressure had risen quite rapidly in Alberta, with a corresponding fall in temperature. By the morning of the 3d the area of high pressure had pushed south and eastward, overspreading Montana and the Dakotas. The area of temperature fall, however, was not coincident with or in advance of the front of the high, but rather in the rear of it, and we also note the rather unusual phenomenon of an extensive area of warm air to the southwest, extending from the Pacific Ocean to the eastern slope of the Rocky Mountains, and covering the plains to the southeast of Colorado as far as Amarillo. We have also here an excellent example of a true fœhn wind, confined to the region of central Colorado on the eastern slope of the Rocky Mountains. Eastward on the plains of western Kansas and Nebraska the chilling effect of the high is manifest and the farther advance of the warm air from the Pacific is effectually barred. The movement south and filling up of a North Pacific low is well illustrated in the present case.

By the evening of the 3d the high extended in the shape of an elongated oval from Assinniboia to Kansas and the central Mississippi Valley. The region of greatest temperature

fall covered Minnesota on the eastern side of the area of highest pressure, and by the a. m. of the 4th had moved south and east, covering eastern Iowa, northern Illinois, northwestern Indiana, Wisconsin, and a portion of Upper Michigan. The farther progress of the high eastward was not attended by marked temperature changes.

III.—This appeared in Alberta on the morning of the 6th. Pressure increased rapidly during the day, a rise of 0.52 of an inch in twelve hours being registered at Edmonton. High pressure continued in Alberta and Assinniboia, and by the morning of the 7th had spread over the northeastern Rocky Mountain slope and the Missouri Valley. The area of greatest temperature fall, on the morning of the 7th, extended as a narrow belt from southern Idaho northeastward through central Montana. By the p. m. of the 7th the area of high pressure had moved southeastward, the central area being partially inclosed by the isobar 30.8, open to the northward. The area of greatest temperature fall occupied three separate and distinct positions, from 300 to 400 miles apart. No. 1 occupied Nebraska and a portion of South Dakota on the southern edge of the central portion of the high; No. 2 a small oval in northwestern Texas, and No. 3 extended as a belt about 150 miles wide on the front of the high, extending from Palestine to Louisville. The maximum intensity of the high was reached by the morning of the 8th; pressure 30.90 at Omaha. Two extensive areas of temperature fall, extensions of Nos. 1 and 3 noted above, appeared on this map, separated by a band of less than 20° fall about 250 miles in width. The farther progress of the high can be traced from the chart.

IV.—This appeared on the morning of the 8th north of Assinniboia and moved eastward, probably uniting with No. III during the p. m. of the 9th in the Lower Lake region.

V.—This was first noted on the a. m. map of the 10th in Saskatchewan. Pressure increased rapidly and the southerly movement began on the night of the 10th. On the morning of the 11th the high occupied Saskatchewan, eastern Assinniboia, Manitoba, eastern Montana, the Dakotas, and western Minnesota. The areas of greatest temperature fall covered central Montana, the western edge of the Dakotas, and a small portion of central Minnesota. During the day the cold area spread rapidly eastward and southward, covering South Dakota, Nebraska, northeastern Kansas, Iowa, northern Missouri, northern Illinois, Wisconsin, and Minnesota. The isobar of 30.70, open northward, marked the region of highest pressure, viz, in North Dakota and Manitoba. On the morning of the 12th the central high had moved but little, although the area of cold had spread rapidly eastward and over the Ohio Valley and the Lower Lake region to central Ohio. At 8 p. m. of the 12th pressure had decreased at the center, but the form of the isobars remained unchanged, except for the lengthening of the southern loops. The area of cold extended from western Texas to western North Carolina and western Pennsylvania, and by the morning of the 13th had swept over the Southern States, carrying freezing temperatures to the Gulf coast from central Texas eastward. Zero temperatures were reported in the upper Ohio Valley, West Virginia, and Pennsylvania.

VI.—This appeared over the north Pacific coast on the evening of the 12th, and moved slowly eastward over the northern plateau. On the morning of the 15th pressure had increased slightly over northwestern Wyoming and southwestern Montana, and an extensive area of temperature fall appeared on the eastern edge of the high. Temperature had been falling, however, for twenty-four hours, but the limit which constitutes a technical cold wave was not reached over any considerable extent of country. By the evening of the 15th the high had broken into two portions, and by the morning of the 16th three separate centers of high pressure appeared—one in Assinniboia and Montana, another in Wyoming, and a third in eastern Kansas. No marked features attended the progress of the third center to the Atlantic.

VII.—This formed in the rear of low area No. VIII on the morning of the 18th. It covered the central valleys as an extensive ridge of high pressure, with a maximum in the Upper Lake region on the morning of the 19th. Its subsequent course is shown on Chart IV. The temperature-fall area in connection with this high was confined to a small portion of Virginia and Maryland on the morning of the 20th.

VIII.—High area No. VIII is charted as originating in Saskatchewan on the morning of the 22d. Pressure rose throughout the central plateau region on the 20th, and at the evening observation of that date formed a ridge extending from Nevada northeastward to Assinniboia between two adjacent areas of lower pressure.

This ridge extended southward and changed its position with reference to the longer axis, and on the evening of the 21st covered the entire Rocky Mountain region with maximum pressure 30.30 at Cheyenne. By the morning of the 22d the southern extremity of the ridge had swung eastward over the west Gulf States, and an extensive area of temperature fall covered the Mississippi and Ohio valleys in the rear of low area No. IX. At this time pressure was rising in Alberta and Saskatchewan, and high area No. VIII began to move eastward. The area of temperature fall in connection with this high appeared in the western quadrant until the evening of the 23d, when it occupied Kansas and Oklahoma, the center of high pressure being in North Dakota. On the succeeding maps the central portion of the high seemed to recede into Manitoba and Assinniboia, where a new center with closed isobars appeared on the evening map of the 24th; long loops of high pressure, however, extended to the Atlantic coast, and on morning of the 25th an independent high, No. VIII*a*, was formed over New Jersey and passed northeastward, as shown by Chart IV.

IX.—Appeared in Saskatchewan on the morning of the 26th, with a narrow V-shaped area of temperature fall projecting southward to Miles City. There was also a triangular-shaped area of temperature fall in eastern Texas, Louisiana, Arkansas, Mississippi, and southern Missouri, caused by an inflow of cold air in the rear of low area No. X. By the morning of the 27th a ridge of high pressure extended from Tennessee to the northern plateau region. Small areas of temperature fall occupied western Montana, southern Wyoming, Wisconsin, the Lower Lakes, and the south Atlantic coast.

X.—This was an offshoot from the permanent high over the central plateau that advanced in the rear of low area No. XI*a*.

XI.—This appeared on the morning map of the 31st, coincident with a considerable fall of temperature over Assinniboia and western Montana. It moved very rapidly southeastward and was central in South Dakota and Colorado at 8 p. m. of the 31st. The area of temperature fall in this case occupied the rear of the central high covering eastern Montana and Wyoming, and the western and southern portion of the Dakotas. Singularly, the 20-degree fall had not yet reached St. Vincent and Huron, although it had passed Moorhead and Yankton, respectively. The further details of this high will appear in the February REVIEW.

LOW AREAS.

The average rate of movement of low area storms in January is 37 statute miles per hour and the average number that traverse some portion of the continent is thirteen.

The tracks of fourteen areas of low pressure are platted on Chart I for January, 1895. The rate of movement of this class of storms is always uncertain and the storms of the present month are no exception to the general rule. Exam-

ples of the tendency to stagnate in the region of the Great Lakes may be seen in low areas Nos. II, IX, XII, and in No. V the unusual example of a storm retrograding after having passed the Great Lakes is seen. The path of this remarkable storm presents many anomalies, and a study of its course is commended to all. Low area No. X likewise illustrates the difficulty of successfully forecasting storm movement. It will be noted that this depression remained almost stationary over Texas for thirty-six hours, and that when it began to move it passed from Corpus Christi to Saugeen, Ont., in thirty-six hours.

The storms of the Pacific Coast present a characteristic that is worthy of special study, viz, an apparent oscillation from the ocean to the land, and *vice versa*, that is to say, the low approaches the coast and partially disappears, reappearing within a period of twelve to thirty-six hours, and continuing this action until the storm finally disappears.

The usual details of the more important low area storms are given below:

I.—The morning map of the 1st showed a slight depression over the Lower Lakes, and an ill-defined area of low pressure on the New England coast, separated from the former by a slight ridge of high pressure, with zero temperature in interior New England. These two areas united during the day, and on the evening map appeared as a well-defined area of low pressure central over Nova Scotia. Pressure increased during the night of the 1st and the storm gradually moved to the northeast.

II.—This appeared on the evening of the 1st, north of Minnesota. It drifted slowly eastward attended by snow in the Lake region, and finally passed to the eastward of Nova Scotia by the morning of the 5th. The movement of high area No. I northeastward on the 3d, apparently checked the progress of this storm while in the Lake region.

III.—This was an area of relatively low pressure that skirted the east Gulf States and passed off the coast of Georgia on the morning of the 3d. Precipitation was general on the 2d throughout the Gulf, south Atlantic, and Middle States, continuing on the coast until the morning of the 3d.

IV.—On the morning of the 2d a well-defined area of low pressure appeared off the north Pacific coast. Pressure was high over British Columbia and Alberta. By evening the area of precipitation had extended to Rapid City, while a moderate cold wave overspread Alberta, Assinniboia, and Manitoba. On the morning of the 3d, the area of high pressure and accompanying cold wave had pushed south and southeastward and occupied Montana and the Upper Missouri Valley; both temperature and pressure gradients to the westward of the high were unusually steep. A portion of the north Pacific low had apparently been separated from the main storm and appeared as an area of relatively low pressure over the Panhandle of Texas. By evening the central portion of the high extended from Swift Current to Des Moines and the Panhandle low had been pushed farther south to central Texas. The north Pacific low in the meantime was developing in intensity, pressure having fallen to 29.1 at Tatoosh Island. On the morning of the 4th the high occupied the central valleys and dominated the weather conditions over the greater portion of the United States. The north Pacific low was still central at Tatoosh Island, although pressure had begun to fall over the northern plateau. The evening map showed an extensive warming up over the eastern slope of the Rocky Mountain region and a projecting wedge of low pressure extending over Montana and the Dakotas. Precipitation had already begun in Kansas and Missouri, though not in the intervening States. On the morning of the 5th pressure had increased to 29.3 inches at Tatoosh Island; the wedge of low pressure over Montana had become separated from the parent storm, forming a new storm center, the second that had become detached from the north Pacific low. This offshoot passed eastward, following the usual track across the Great Lakes and down the St. Lawrence Valley, and disappeared on the evening of the 7th. The original storm center gradually filled up and by the morning of the 6th had almost disappeared.

V.—This was the most erratic storm of the month, both as regards direction and rate of movement. It was evidently formed at the lower extremity of an extensive trough of low pressure that extended from Texas to the Lake region on the morning of the 7th. The evening map of the 7th showed a slight depression central in the west Gulf. An extensive area of high pressure was advancing from the northwest with clear weather and zero temperature. The temperature gradients northward from New Orleans were regular but pronounced, being 5° per latitude degree to the northern boundary at St. Vincent. For forty-eight hours the storm skirted the Gulf coast, giving rain in the northern and eastern and snow in the northwestern and western quadrants. The high area mentioned above as advancing from the Northwest, curved to the northeast when central over Kansas and Missouri, and while over the lower St. Lawrence Valley, with pressure 30.60 at Montreal and Northfield, the low which had been almost stationary in northern Florida for twenty-four hours, suddenly curved inland, and by the morning of the 10th was central in eastern Kentucky and Tennessee. The storm moved rapidly northeastward for twenty-four hours increasing in intensity and reaching a point near Georgian Bay, when it suddenly altered its course and moved to Grand Haven by the evening of the 11th. The data on the map afford no clue to the causes of this backward movement. An area of high pressure was advancing toward Grand Haven on the west, pressure had fallen over the Canadian Maritime Provinces, and there was every reason to believe the storm would pursue the usual course.

The morning map of the 12th showed the storm center near Parkersburg with an extensive cold wave in its rear. The temperature contrasts between the front of the cold wave and the rear of the storm center, were exceedingly sharp, being as much as 42° in less than 150 miles. By the evening of the 12th the storm center had reached the Atlantic coast in the vicinity of Norfolk, and thence pursued a northerly course, disappearing by filling up on the morning of the 14th. This was one of the most remarkable January storms ever experienced, and is deserving of further notice. In its inception and full development the temperature contrasts in the western and southwestern gradients were unusually sharp.

VI.—This developed on the north Pacific coast between the 10th and 12th, moved across the United States almost parallel with the northern boundary, and passed beyond the field of observation on the 17th.

VII.—The warming up in the west Gulf on the 14th, and the formation of an area of cloud and rain, indicated a disturbance in that region although the pressure distribution and the circulation of the wind did not fully corroborate it until the evening of the 15th. The rain area had then extended as far northeast as lower Indiana and Illinois. This depression gave light rains in the Gulf and Atlantic coast States, and moved rapidly to the northeastward, passing south of Nova Scotia on the morning of the 17th.

VIII.—Pressure was low on the Pacific coast on the 14th, but without precipitation or storm winds. It continued falling rapidly on the 15th, and by the morning of the 16th had decreased over the entire country west of the one hundred and fifteenth meridian. Rain had fallen from Fort Canby to Tucson. By the morning of the 17th the precipitation area had extended eastward to central Montana and southward to Lander and Salt Lake City. The warming up on the eastern slope of the Rocky Mountains, the visible indication of the transfer-

ence of the low to the eastern side, first appeared on the morning map of the 17th. By the morning of the 18th a well-defined system of circulating winds around a central area of low pressure appeared in Iowa and moved eastward passing off the coast of New Brunswick on the night of the 19th.

IX.—The origin of low area No. IX is given as eastern Wyoming. There is no evidence, however, that it was not an offshoot of a low pressure area on the Pacific coast which followed No. VIII. This storm developed as it approached the Great Lakes, and gave the first severe stormwinds of the month. It decreased in severity after passing the Lakes and passed beyond the region of observation as a very moderate disturbance.

X.—This appeared on the morning of the 23d as an ill-defined area of low pressure over central Texas. It developed very slightly and remained almost stationary during the next thirty-six hours, but the morning map of the 25th showed a rapid movement and an increase in intensity. By the morning of the 26th pressure had fallen to 29.04 at Saugeen, and the storm had moved 1,500 miles in thirty-six hours; in its further course it gradually diminished and passed down the St. Lawrence Valley as a storm of moderate energy.

XI.—This belongs to that class of storms that occasionally pass from the Pacific along the southern border of the United States and up the Atlantic coast. On the morning of the 27th an extensive ridge of high pressure extended from eastern Tennessee to western Montana. Pressure was lowest on the south California coast. Rain was falling in Arizona and rain and snow in Texas. Twelve hours later the precipitation area covered the greater part of New Mexico, Texas, and Louisiana; the south California low had deepened slightly, and the ridge of high pressure had advanced to the southward, doubtless causing the extensive precipitation of rain and snow in Texas and New Mexico. By the morning of the 28th the ridge of high pressure had broken into two parts, one central over the middle plateau, the other over the Ohio Valley. The southern California low had lost energy and an independent storm center appeared in the central Gulf. The temperature throughout the Lower Mississippi Valley and the Gulf States was below the normal for the season, and extensive snows prevailed from Kansas and Oklahoma eastward to central Tennessee. The low drifted eastward rapidly and passed up the Atlantic coast, giving rain on the immediate coast and heavy snow in the interior.

XII.—This appeared in Alberta on the evening of the 27th, and passed rapidly southeastward until reaching the Lake region. Here, as sometimes happens, the rate of movement was much reduced, and the storm occupied the Lake region for about thirty-six hours.

XIII.—This appeared in the Saskatchewan Valley on the evening of the 29th as an ill-defined depression, and at no time in its course did it develop stormwinds or extensive precipitation.

XIV.—This appeared off the west Florida coast on the evening of the 29th. It remained almost stationary over the Florida Peninsula until the evening of the 31st, giving heavy rains on the coast as far north as New Jersey.

MOVEMENT OF CENTERS.

The following table shows the date and location of the center at the beginning and ending of each area of high or low pressure that has appeared on the U. S. Weather Maps during the month, together with the average daily and hourly velocities. The monthly averages will differ according as we consider each path as a distinct unit, or give equal weight to each day of observation; in the first case the monthly average is taken by paths, in the latter case by days.

Movement of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a. m.	35	85	3, a. m.	43	68	1,100	2.0	550	22.9
II	2, a. m.	52	113	5, a. m.	44	61	2,900	3.0	967	40.3
III	6, a. m.	54	112	10, p. m.	47	58	3,500	4.5	778	32.4
IV	8, a. m.	54	104	9, p. m.	46	76	1,500	1.5	1,000	41.7
IV*a*	8, a. m.	39	114	12, p. m.	39	112	....	......	....	......
V	10, a. m.	55	108	13, a. m.	51	87	1,400	3.0	467	19.5
VI	13, p. m.	47	122	18, p. m.	32	78	3,200	5.0	640	26.7
VII	18, a. m.	39	101	20, p. m.	32	78	2,400	2.5	960	40.0
VIII	22, a. m.	55	87	23, p. m.	44	93	2,400	1.5	1,600	66.7
VIII*a*	25, a. m.	42	74	26, a. m.	46	60	900	1.0	900	37.5
IX	26, a. m.	55	119	28, p. m.	39	70	3,200	2.5	1,280	53.3
IX*a*	28, a. m.	44	117	31, a. m.	45	114	....	......	....	......
X	30, a. m.	33	99	31, p. m.	45	67	1,900	1.5	1,267	52.8
XI	31, a. m.	49	113	31, p. m.	46	101	600	0.5	....	......
Sums	....	......	......	....	......	......	25,000	28.5	10,409	......
Mean of 11 paths	....	......	......	....	......	......	....	......	946	39.4
Mean of 28.5 days	....	......	......	....	......	......	....	......	877	36.5
Low areas.										
I	1, a. m.	43	69	1, p. m.	48	63	600	0.5	....	......
II	1, p. m.	50	97	5, a. m.	47	58	2,200	3.5	629	26.2
III	2, a. m.	29	93	3, a. m.	33	75	1,000	1.0	1,000	41.7
IV	2, a. m.	49	130	5, p. m.	45	125	700	3.5	100	4.2
IV*a*	5, a. m.	45	104	7, p. m.	49	62	2,500	2.5	1,000	41.7
V	7, p. m.	27	95	14, a. m.	46	77	3,900	6.5	600	25.0
VI	10, a. m.	50	126	17, a. m.	47	58	3,200	7.0	429	17.9
VII	15, a. m.	26	96	16, p. m.	42	61	2,300	1.5	1,533	63.9
VIII	14, p. m.	44	127	18, a. m.	47	122	800	3.5	114	4.8
VIII*a*	17, p. m.	37	101	19, a. m.	40	72	1,800	1.5	1,200	50.0
IX	19, p. m.	43	107	23, a. m.	45	60	2,700	3.5	771	32.1
X	23, a. m.	28	98	27, a. m.	51	61	3,000	4.0	750	31.2
XI	27, a. m.	34	118	28, a. m.	31	116	350	1.0	350	14.6
XII	27, p. m.	54	111	30, p. m.	50	65	2,400	3.0	800	33.3
XIII	29, p. m.	51	113	31, p. m.	47	85	1,500	2.0	750	31.2
XIV	29, p. m.	29	84	31, a. m.	31	76	450	1.5	300	14.5
Sums	....	......	......	....	......	......	29,400	46.0	10,326	......
Mean of 15 paths	....	......	......	....	......	......	....	......	688	28.7
Mean of 46 days	....	......	......	....	......	......	....	......	639	26.6

NORTH ATLANTIC METEOROLOGY.

[*Pressure in inches and millimeters; wind force by Beaufort scale.*]

NORMAL CONDITIONS.

The normal barometric pressure for January over the North Atlantic Ocean, as deduced from international simultaneous meteorological observations taken at Greenwich noon and not reduced to standard gravity, is highest, 30.20 (767), in a small area between the Azores and the Windward Islands; it is lowest, 29.50 (749), in a region between Greenland, Iceland, and Spitzbergen. As compared with December the normal pressure for January rises about 0.05 in the region southwest of the Azores, but falls in the extreme North Atlantic.

OCEAN FOG.

The limits of fog belts west of the fortieth meridian, as reported by navigators, are shown on Chart I by dotted shading. Near the Grand Banks of Newfoundland fog was reported on 20 dates; between the fifty-fifth and sixty-fifth meridian on 6 dates; and west of the sixty-fifth meridian on 3 dates. Compared with the corresponding month of the last seven years the dates of occurrence of fog east of the fifty-fifth meridian numbered 13 more than the average; between the fifty-fifth and sixty-fifth meridians 3 less than the average; and west of the sixty-fifth meridian, 3 less than the average.

OCEAN ICE.

The positions of icebergs reported for the current month are shown on Chart I by crosses. On the 2d ice was observed in N. 45° 34', W. 50° 35'. On the 11th, in N. 47° 40', W. 49° 58', a large berg was noted. On the 13th heavy ice was encountered near St. Johns, N. F. On the 23d, a berg 100 feet high and 300 feet long, was reported in N. 48° 16', W. 50° 39'.

From January, 1882 to 1888, inclusive, arctic ice in small quantities was reported east of Newfoundland, but in no case was it sighted south of the forty-third parallel. In 1889 and 1892 no ice was reported. In 1890 vast fields of ice and enormous icebergs were encountered over and near the Grand Banks, north of the forty-third parallel. In 1891, on the 28th, 3 large icebergs were observed in N. 46° 30', W. 52° 46', and on the 31st patches of soft ice were encountered in N. 45° 50', W. 59° 20'. In 1893, on the 5th, a large berg was noted in N. 47° 35', W. 48° 34; on the 8th, a long, low berg was observed in N. 48° 10', W. 47° 26'; on the 18th, a berg was noted in N. 48°, W. 46°. In 1894 more ice was reported during January than in any corresponding month for the past 12 years.

TEMPERATURE OF THE AIR.

[*In degrees Fahrenheit.*]

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

DIURNAL PERIODICITY.

The regular diurnal period in temperature is shown by the hourly means given in Table IV for all stations having self-registers.

NORMAL TEMPERATURE.

In Table II, for voluntary observers, the mean temperature is given for each station, but in Table I, for the regular stations of the Weather Bureau, both the mean temperatures and the departures from the normal are given for the current month. In the latter table the stations are grouped by geographical districts, for each of which is given the average temperature and departure from the normal; the normal for any district or station may be found by adding the departures to the current average when the latter is below the normal and by subtracting when it is above.

The years of highest and lowest mean temperature for January may be had from Table I of the January, 1894, REVIEW. In this REVIEW the absolute January maximum and minimum temperature for each Weather Bureau station during the entire period of observation is given on the right margin of Table I. It is proposed to give these data for each month in the successive issues of the REVIEW.

Some of the details heretofore published under this section have been omitted to make room for other articles, but the numerical tables contain the information usually given, and its repetition in this text is believed to be unnecessary.

PRECIPITATION.

[*In inches and hundredths.*]

The distribution of precipitation for the month of January, 1895, as determined by reports from about 2,000 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III; the first of these also gives the average departures from the normal for each district. Unless otherwise stated, the snow or hail is understood to be melted and added to the rainfall.

DIURNAL VARIATION.

Table XII gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 7 are weighing gauges.

NORMAL PRECIPITATION FOR JANUARY.

The normal precipitation for January is shown on Chart I of the Atlas of Bulletin C, entitled "Rainfall and Snow of the United States, Compiled to the End of 1891, with Annual, Seasonal, Monthly, and other Charts," by Mark W. Harrington, Chief of the Weather Bureau, Washington, 1894. From this chart it appears that the region of greatest rainfall in January is on the north Pacific coast and in the Lower Mississippi Valley, including Tennessee and the mountainous portions of Georgia and North Carolina.

PRECIPITATION FOR CURRENT MONTH.

The precipitation for the current January was heaviest in the extreme northwest corner of Washington and along the Pacific coast as far south as San Francisco. The maxima were: East Clallam, 15.44; Tatoosh Island, 12.50; Neah Bay, 12.44; Pysht 12.07; Fort Canby, 11.52, also at Halifax, 10.12. Other details may be drawn from the charts and tables.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 16. Arizona, 24. Arkansas, 6, 20. California, 15 to 18. Florida, 9, 16. Illinois, 21. Indian Territory, 19. Iowa, 20, 21. Kentucky, 7. Louisiana, 1, 25. Maryland, 12. Michigan, 21. Mississippi, 15, 16. Missouri, 15, 20, 21. Oregon, 11, 13, 17, 21. South Carolina, 2. Tennessee, 7. Texas, 24, 25. Virginia, 12. Washington, 13.

SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 2, 8, 9, 10, 28. Arizona, 17. Arkansas, 1, 2, 4, 8, 15, 24, 25, 27, 30. California, 3, 8, 16, 18, 19, 20, 23. Connecticut, 6, 8, 10, 11, 16, 26. Delaware, 8, 15, 25. District of Columbia, 9, 25, 26. Georgia, 2, 3, 28, 29. Idaho, 1, 4, 11, 13, 16. Illinois, 5, 6, 9, 11, 16, 20, 25. Indiana, 5, 6, 10, 25, 26. Indian Territory, 1, 2, 24. Iowa, 4, 5, 6, 18, 21. Kansas, 3, 4, 5, 14, 15, 20, 21, 25, 31. Kentucky, 9, 10, 25, 26. Louisiana, 27 to 30. Maine, 6, 7, 10, 11, 13. Maryland, 5, 6, 8, 9, 10, 12, 16, 18, 24, 25, 26, 28. Massachusetts, 6, 9, 10, 11, 18, 22, 26. Michigan, 5, 7, 18, 20, 21. Minnesota, 5, 17, 18, 20, 21. Mississippi, 1, 3, 8, 9, 14, 27 to 30. Missouri, 3 to 7, 10, 14, 15, 20, 24, 25, 27, 29. Nebraska, 5, 13, 14, 17, 18, 19, 21, 22, 30. Nevada, 4, 5, 6, 12, 13, 16 to 19, 22. New Hampshire, 6, 7, 10, 11, 13, 26. New Jersey, 5 to 10, 13, 15, 16, 18, 19, 21, 22, 25, 26.

New York, 5, 6, 8, 10, 11, 13, 18, 25, 26. North Carolina, 3, 9, 10, 12, 17, 25, 26, 28, 29, 30. North Dakota, 13, 14, 18, 19, 20. Ohio, 5, 6, 8, 9, 10, 16, 18, 23 to 26. Oklahoma, 1, 4. Oregon, 4, 9, 17. Pennsylvania, 5, 6, 8, 9, 10, 16, 18, 25, 26. Rhode Island, 10, 16. South Carolina, 2, 12, 16, 28, 30. South Dakota, 4, 15, 19, 20, 28. Tennessee, 8, 9, 10, 14, 15, 28. Texas, 1, 26 to 29. Utah, 5, 16, 19, 23. Vermont, 10 to 13, 22. Virginia, 5, 8, 9, 10, 12, 14, 17, 19, 25, 26, 28. Washington, 2 to 5, 8, 13, 14, 17. West Virginia, 4, 6, 9, 10, 19, 25, 26, 29. Wisconsin, 18, 20, 21.

WIND.

PREVAILING DIRECTIONS.

The prevailing winds for January, 1895, viz, those that were recorded most frequently at Weather Bureau stations, are shown in Tables I and IX; they are not given on Chart II, as has hitherto been the custom, but the resultant winds are published instead.

HIGH WINDS.

Maximum wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Amarillo, Tex	5	50	sw.	Fort Canby, Wash	20	52	e.
Do	20	76	w.	Grand Haven, Mich	21	50	sw.
Block Island, R. I	10	53	ne.	Hannibal, Mo	21	50	w.
Do	26	56	se.	Idaho Falls, Idaho	16	52	s.
Buffalo, N. Y	26	64	w.	Kittyhawk, N. C	25	52	se.
Do	27	50	w.	Do	26	56	se.
Cairo, Ill	25	52	sw.	Do	28	50	n.
Chicago, Ill	21	64	sw.	Lexington, Ky	26	60	sw.
Do	25	60	ne.	Milwaukee, Wis	21	50	sw.
Cleveland, Ohio	13	54	sw.	Port Huron, Mich	21	53	sw.
Davenport, Iowa	21	54	sw.	Pueblo, Colo	17	50	sw.
Eastport, Me	26	66	se.	St. Louis, Mo	21	56	sw.
Fort Canby, Wash	2	58	e.	Tatoosh Island, Wash	2	66	e.
Do	3	56	e.	Do	3	73	e.
Do	4	53	e.	Do	12	54	s.
Do	9	52	s.	Do	13	50	w.
Do	10	52	se.	Do	15	52	e.
Do	11	58	se.	Do	16	50	e.
Do	12	77	se.	Winnemucca, Nev	4	60	s.
Do	13	54	se.	Woods Holl, Mass	13	50	sw.
Do	15	50	e.	Do	26	54	sw.
Do	16	58	e.				

LOCAL STORMS.

Destructive or severe local storms were reported as follows:

3d.—Seattle, Wash., snowstorm.

5th.—Salt Lake City, Utah, windstorm.

6th.—Little Rock, Ark., thunderstorm.

7th.—Nunnelly, Tenn., and Greendale, Ky., thunderstorms.

8th.—Kershaw, S. C., thunderstorm.

13th.—Near Fulton, Mo., windstorm.

16th.—Mobile, Ala., thunderstorm; several persons injured.

17th.—Oakland, Cal., windstorm.

18th.—Northwestern part of Daviess County, Mo., windstorm.

19th.—Los Angeles, Cal., rainstorm.

20th.—Kiowa, Kans., windstorm.

21st.—New Iberia, La., windstorm; 1 person injured. Eglantine and near Pocahontas, Ark., windstorms. Winslow, Ark., thunderstorm. Near Greenway, Ark., thunderstorm; 13 persons injured. Covington, Tenn., and Unionville, Mo., thunderstorms. Nelson, Mo., and Benton Harbor and Muskegon, Mich., windstorms.

24th.—Livingston, Tex., windstorm.

25th.—Crowley, La., windstorm; 1 person killed. Western part of Vermilion County, La., windstorm; 2 persons killed. Rayne, La., windstorm. Kountze, Tex., windstorm; 2 persons injured. Near Beaumont, Texas City, Olive, and Dodge, Tex., and Olney, Ill., windstorms.

28th.—Magnolia, Miss., windstorm; several persons injured. Alvin, Tex., windstorm. Galveston, Lamarque, Webster, and Clear Creek, Tex., thunderstorms. Dickinson, Tex., thunderstorm; 4 persons injured.

ATMOSPHERIC ELECTRICITY.

GENERAL STATISTICS.

The statistics relative to auroras and thunderstorms for this month are given in detail in Table XI, which shows the number of stations from which meteorologic reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month.

THUNDERSTORMS.

A mention of the more severe thunderstorms reported during the month is made under "Local storms." The dates on which reports of thunderstorms were most numerous were: 6th, 7th, 16th, 20th, 21st.

The States where thunderstorm reports were most numerous were: Louisiana, Ohio, Missouri, Illinois, Mississippi, Florida, Iowa, and North Carolina.

The States where the dates of thunderstorms were most frequent were: Louisiana, where they were recorded on 15 days; Florida, on 14 days; Ohio, on 9 days; Mississippi, on 8 days; North Carolina and Arkansas, on 7 days.

AURORAS.

The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four days preceding and following the date of full moon, viz, from the 6th to the 14th, inclusive. On the remaining twenty-two days of this month 122 reports were received, or an average of 6 per day. The dates on which the reported number especially exceeded this average were: 1st, 18; 16th, 15; 19th, 16.

The States from which auroras were reported by a large percentage of observers were: Vermont, North Dakota, New Hampshire, and Minnesota.

The States where the dates of auroras were most numerous were: Wisconsin, 11; Minnesota, 10; Colorado, 8; Nevada, North Dakota, and Vermont, 5.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

Auroras were reported as follows: 1st, Kingston, Ont.; 2d, Medicine Hat, Assin., and Prince Albert, Sask.; 15th, Medicine Hat, Assin.; 17th, Father Point and Quebec, Que.; White River, Ont., and Minnedosa, Man.; 18th, Father Point, Que., and Qu'Appelle, Assin.; 19th, St. Andrews, N. B., Quebec, Que., Kingston, Ont., Minnedosa, Man., and Medicine Hat, Assin.; 20th, Father Point, Que., and Medicine Hat,

Assin.; 21st, Swift Current, Assin., and Battleford, Sask.; 22d, Qu'Appelle, Assin., and Battleford, Sask.; 23d, Minnedosa, Man., and Medicine Hat, Assin.; 24th, Minnedosa, Man., Medicine Hat, Assin., and Prince Albert, Sask.; 27th, Kingston, Ont.; 29th and 30th, Minnedosa, Man.; 31st, Quebec, Que., and Minnedosa, Man.

METEOROLOGY AND MAGNETISM.

The movements of our atmosphere are to be studied primarily as problems in the mechanics and thermodynamics of moving gases and vapors, but our knowledge of the empirical relations between atmospheric phenomena and terrestrial magnetism has been elucidated by a few special students, and further study in this direction has been recognized by the Chief of the Weather Bureau as proper and desirable. As the subject of atmospheric electricity, including that of auroras and earth currents, has a small section in this REVIEW, Professor Bigelow contributes the following section on terrestrial magnetism.

THE COMPARISON OF TEMPERATURE WITH MAGNETIC HORIZONTAL FORCE.

By Prof. F. H. BIGELOW.

The columns headed Calgary, Williston, and Sioux City give for each day, respectively, the mean of the 8 a. m. and 8 p. m. observations of temperature at the following groups of stations:

Calgary for Minnedosa, Qu'Appelle, Prince Albert, Swift Current, Medicine Hat, Battleford, Edmonton, Calgary.

Williston for Valentine, Yankton, Huron, Pierre, Moorhead, Bismarck, Williston.

Sioux City for Springfield, Mo., Kansas City, Wichita, Concordia, Omaha, Sioux City.

The average temperature for each group is reduced back to the origin, W. 115°, N. 55°, by a correction for eastward drift (see Amer. Jour. Sci., Dec., 1894). The first differences of these numbers are taken; then the monthly mean of the first differences for slope; then the variations on the slope; then these latter are added successively throughout the month and the accumulated sums give the ordinates of the curve for each group; the mean of these three groups is taken and gives the curve in the upper part of Chart V; the monthly mean of the ordinates is added with reverse sign to reduce to a true datum line. Thus, the eastward drift and the slope have been eliminated, and the variations reduced to a zero base line.

The magnetic data are treated in the same way as the temperatures. The curve as plotted is the mean of the ordinates of the three stations. It has been found that at least five magnetic observations are required to eliminate local conditions and to give a true value of the external impressed field, though seven are better. By inspecting the columns it will be seen that local variations disturb the curves in certain cases. Hence, as the data now exist, the comparison can give only partially accurate curves as to detail, though the main features may be expected to appear.

SPECIAL FEATURES OF THE JANUARY CURVES.

The temperatures of the Calgary group need the correction +1 for slope; the others are uncorrected. San Antonio is reduced for amplitude by the factor $\frac{1}{2}$; the others are unchanged. The mean temperatures are reduced to a zero datum line by +1, and the mean magnetic force by +23.

The new magnetic ephemeris, with the epoch June 13.72, 1887, went into effect on January 1, 1895 (see Am. Met. Jour., Jan., 1895). This is a change from June 12.22 for the epoch of the 26.68 day period, to conform to the position of the solar axis of the magnetic curve. The new period, therefore, begins on January 17.44. No magnetic disturbances were reported in January, 1895.

STATE WEATHER SERVICES.

The following extracts are given in regard to the general weather conditions experienced in the several States and Territories as reported by State Weather Service Directors:

Alabama.—January, which on an average is the coldest month of the year in this State, has been a typically wintry month, with many changes from daily normals for temperature and an excess of about 2 inches in rainfall. Three distinct cold waves passed over the State; one, on the 13th, brought very low temperatures all over the State, and high westerly winds prevailed on the 12th, 13th, 15th, and 26th.

Arizona.—The average temperature for the Territory, as deduced from the records of 36 stations, was 43.2°, or about 5° above the normal. The average precipitation, as deduced from the records of 44 stations, was 2.49 inches, which is about 1.50 inches above the normal.

Arkansas.—The monthly mean temperature for the current month was 3.3° below the normal. There were three distinct periods of abnormally low daily mean temperatures, viz, 1st to 4th, inclusive, about 8° per day below the normal; 12th to 14th, 15° below the normal, and 26th to end of month, 16° below the normal. The warm periods were 5th to 7th, 14° per day above the normal, and the highest temperature for the month was recorded at many stations; 18th to 23d, about 10°.

California.—The deficiency in temperature has caused no damage from frost, nor has the excessive precipitation done any material damage, excepting the flooding of some valuable lands along the Sacramento River, which will be planted to crops later on in the season.

Colorado.—The average temperature for the State was about 2° above the January normal. The fall of snow was most general on the 15th and 31st.

Florida.—The mean temperature for the month was about 2.2° lower than the mean for January, 1894.

Georgia.—The month opened with very cold weather prevailing, and on the 13th the State was again visited by a cold wave of marked severity, causing the mercury to fall to near zero at points in the northern districts, and far below the freezing point in the most southerly counties. The average temperature of the month, as a whole, however, varied but little from the normal. In the most northerly counties snow fell at quite a number of stations on the morning of the 12th, and again on the 28th and 30th, in the extreme northern sections only.

Idaho.—Snow fell over the greater portion of the State from the 8th to 13th and from the 16th to 23d. The cold periods were on the 7th and 8th and from the 25th to 31st. The monthly mean temperature for the State was 1.7° below that of January of last year.

Illinois.—The month was cold and stormy; snowstorms, with high winds, following each other in quick succession, and the intervals between storms were marked by sudden and severe cold waves. The month, although severe, was not greatly below the normal temperature, and was by no means the most severe on record. Five periods of severe cold are distinctly noted, viz, 4-5th, 8-9th, 11-14th, 23d-24th, 27th-31st. But one period of warmth is worthy of special mention, that of the week from the 15th to the evening of the 21st, although in southern counties the 6th and 7th were marked by high temperatures, in many cases the highest of the month.

The snow covering the State was generally sufficient to afford light protection to winter grain until the warm weather of the 18-20th, when it practically disappeared. Though the ground was exposed to the cold wave of the 23d-24th, a good mantle of snow again afforded protection from the very severe weather of the 27th to 31st. It is thought that grain has thus far escaped material injury.

Indiana.—The month was a cold one; the temperature was above the normal only 9 days, uninterruptedly so from the 15th to the 21st. The average temperature for the State was 2.9° below the January normal, and a deficiency in average temperature is noted in all portions of the State.

The heavy snowfall on the night of the 11th, during exceedingly low temperature and high west and northwest winds, was found to be

covered by a brown dust in many localities on the morning of the 12th. Many ideas as to its origin have been advanced.

Snow covered the fields more or less during the month and protected wheat and grass, and both were in good condition at the end of the month. In some localities peaches are reported to be injured by the low temperatures.

Iowa.—The current month was colder than the average with less than the normal amount of precipitation. Six cold waves of considerable severity swept across the State during the month, giving greater than the usual extremes of temperature.

Kansas.—January was a cold month, the temperature being generally below the normal. The warmest day was the 20th, the coldest day in the eastern half of the State occurred on the 12th, in the western half it occurred at the end of the month. Snowfall was below the normal over the entire eastern half, but above in the rest of the State.

Kentucky.—The normal temperature for the current month, as deduced from the records of the Weather Bureau stations at Cairo, Cincinnati, Lexington, and Louisville, covering periods of from twelve to twenty-three years, is 33°, which is about 3° in excess of that for the past January. The month was characterized by a cold wave of exceptional severity, which occurred on the 12th and 13th, and the fact that snow covered the ground throughout the State during the entire period from the 1st to the 31st. These conditions are considered as being highly favorable to agricultural interests. Precipitation, mainly in the form of snow, was about 1.50 inches in excess of the average.

Louisiana.—The weather during the current month was slightly colder than in a normal January, being about 1.5° below the normal mean temperature. The precipitation averaged very nearly the normal January fall, being slightly deficient in north Louisiana and slightly in excess in south Louisiana.

Maryland.—Three storms passed over the State during the current month, the most severe being that of the 26th. The monthly mean temperature was 3.4° below the normal. Precipitation 1.09 above the normal. The greatest fall of snow during the month, 56 inches, was reported by the observer at Oakland.

Michigan.—But two stations in the entire State have a mean monthly temperature above the normal, viz, Marquette and Alpena; at all other stations it was below. The 28th was the coldest day, the mean temperature of the State being 4°, and the temperature at almost every station falling below zero, while the maximum temperature for the day averaged less than 10°. The average precipitation was 0.77 above the normal. The average snowfall was quite heavy, 25.8 inches.

Minnesota.—The monthly mean for the State, as determined from 62 stations, was 2.3° colder than usual. During the first half of the month the temperature averaged about normal. A warm spell, averaging daily 12° above the normal, prevailed from the 14th to 21st. This was immediately followed by a decided change to colder, lasting throughout the remainder of the month, and with temperatures averaging daily about 10° below the normal. On the 5th and 6th from one to six inches of snow fell throughout the State, and the ground remained amply protected thereafter. From an agricultural point of view the weather was as favorable as could be wished for.

Mississippi.—The current month was cloudy, cold, and wet in this State, there having been a decided deficiency in temperature and a moderate excess of precipitation, as compared with the normal record of these conditions. There were two warm periods, viz, 6–7th and 16–20th, and two cold, viz, 1st, 12–13th. Three distinct snowstorm periods were observed: The first, on the 1st and 2d, was confined to the northern stations; the second lasted from the 8th to the 10th and was felt in all sections except the extreme southwest; the third prevailed from the 27th to the 29th but did not extend below the central counties.

Missouri.—The most prominent features of the current month were the cold wave which passed over the State on the 12th, the unusually warm weather from the 18th to the 21st, and the heavy snows and low temperature of the last seven days. On the 2d and 3d snow fell in the southern portion of the State to a depth of from 1 to 8 inches, and on the 25th and 26th heavy snow was general, except in the southeast section, drifting badly in some localities. From the 26th to the close of the month the temperature was much below the normal. Up to the 25th winter wheat had but little protection, but at the close of the month the ground was covered with snow over the greater portion of the State. Water for stock continues very scarce in many localities.

Montana.—The temperature for the current month was about 4° below the normal. The precipitation was about 0.35 of an inch above. The coldest weather during the month occurred on the 27th, and the warmest on the 12th and 13th.

Nevada.—The mean temperature for the State was 1.2° below the normal. The precipitation was 0.82 above the 8-year normal. The greatest snowfall, 93.0 inches, occurred at Marlette Lake, and the least, 2.0 inches, at Downeyville.

Nebraska.—The month was very nearly a normal one with a mean temperature of 18.9°, which is one-tenth of a degree warmer than the average for the past sixteen years.

The average snowfall for the State was about 4 inches, representing 0.39 inch of precipitation, or about half the normal amount.

New England.—There were no great extremes in temperature during the month, but the weather was characterized by generally steady disagreeable conditions. Nine cyclones and the same number of anticyclones influenced the weather in this section. About the usual amount of snow fell in the southern districts, but it was less than normal in the north. Probably no injury has been done to grass or grain roots, and the temperature has not been low enough to damage fruit trees.

New Jersey.—The mean temperature for the State was 1.4° below the normal for the month. Precipitation 0.78 inch above the normal. A great quantity of snow fell, the ground being covered much of the time.

New Mexico.—The temperature throughout the month averaged about normal. Thirteen stations reported a minimum below zero. The precipitation was much above the normal and quite unevenly distributed. The greatest total snowfall was 53 inches at Chama, and the least was a trace at Springer.

(A State Weather Service in this Territory has lately been established by the Legislature.)

New York.—Both pressure and temperature were below the normal, but the month does not rank among the very cold Januaries shown by the records of this State. Cold weather prevailed from the 1st to the 6th, the lowest temperature of the month occurring on the 5th. The period included between the 6th and the 18th was for the most part slightly warmer than the normal, as were, also, the 21st and 22d, after which the weather continued cold until the close of the month. The highest temperature obtained on the 7th and 11th, when the maxima exceeded 50° in the coast region.

The total precipitation, while generally above the normal, was noticeably deficient in portions of the central and eastern sections. The only notably heavy rain or snowfall occurred on the 26th.

North Dakota.—The month of January, just closed, was a severe one even for this latitude, and was remarkable for its long-continued cold periods. While the extremes of temperature of former years have not been reached, yet the mean temperature averaged 2° lower than the normal or mean for many years past.

The snowfall was lighter than usual, although the number of days on which it fell was nearly double the usual number, but, owing to the absence of high winds, it did not drift badly, and the amount on the ground at the close of the month was much nearer the average than has been for some years past.

North Carolina.—The month of January was a very wet, cold, and altogether disagreeable month. The weather was influenced by an unusually large number of low areas, many of which passed south of the State or lingered on the south Atlantic coast. The temperature was below normal on about seventeen days during the month, the greatest departures occurring on the 13th and 14th, during the prevalence of a severe cold wave. The warmest periods during the month were 6th, 7th, 8th, 16th to 19th inclusive, and 21st to 24th. The coldest day everywhere was the 13th, except in the southeast, where it occurred on the 1st, the effect of the last cold wave of December, 1894.

The average precipitation was 1.89 inches above the normal, the greatest departure occurring in the central district, where the average exceeded the normal by 2.70 inches.

Ohio.—The mean temperature was below the average. The heaviest fall of snow occurred from the 10th to the 13th, and averaged 8.1 inches for the State, falling in advance of the severe cold of the 12th and 13th, it afforded excellent protection to the winter cereals. The light snowfall during the latter portion of the month was not sufficient to give much protection, and as a result the cold wave following proved injurious to the winter cereals.

Oklahoma.—Average temperature, 1.5° below the normal, and precipitation 0.52 below. Farmers generally concede that the prospect for anything like an average wheat crop is anything but encouraging, and the majority think there will be no crop at all. Many fields planted late never sprouted at all and the earlier fields came up, but the subsequent drought destroyed nearly all the roots.

Oregon.—A nearly normal temperature, unusually copious rain and snow fall, and a remarkably severe sleetstorm were the chief characteristics of the weather that prevailed in Oregon during January, 1895.

There was an excess of precipitation in all sections of the State, especially in the Willamette Valley and the coast section. No such precipitation as this month's has occurred in the Willamette Valley in six years. The average for the whole State was 9.45 inches, or 2.99 inches above the normal.

Pennsylvania.—The average temperature for the month was 4.4° below the average of the past seven years, and the average precipitation was 0.70 more than the average for the last seven years.

South Carolina.—The month has been about 2° colder than the average. There was one cold wave of unusual severity which gave below zero temperatures in the mountains of the western portion of the State on the 13th, and in other portions the temperature fell to, or below, previously recorded low readings for the same month. There was more than the average rainfall, the excess being 3.00 inches, or 166 per cent of the normal. This delayed plowing and other farm work incidental to the season in this State. In the low counties the swamps and lowlands were filled with water, and many roads became almost impassable for vehicles. The severe cold weather, it is reported, greatly injured fall-sown oats, but did little injury to wheat and rye.

South Dakota.—With the exception of three or four days, the first and second decades of the month were comparatively mild, but the third decade was marked by continued and steady cold weather, although the extremes of cold were not as great as usual. The average depth of the snow on the ground on the 15th was 1.6 inch, and on the last day of the month, 3.00.

Tennessee.—This has been a rather cold, wet month. The temperature averaged about 2° below the normal during the entire month, while there were but six days on which there was no precipitation. The most severe cold of the month reached us on the night of the 11th, reducing the temperature to from 1° above zero in the western portion of the State to 15° below zero in the northeastern portion. With one exception, 1892, the month averaged colder than any January since 1886.

The cold weather has caused much suffering among stock, but on the whole has been beneficial to the farmer, keeping back vegetation, etc. Wheat has been protected by a covering of snow and is said to be in excellent condition. The sap has been kept down in fruit trees, and if these conditions continue until the opening of spring we may expect a good crop and fruit yield throughout the State.

Texas.—The temperature on an average for the State was 1.5° above the normal. Several light northers crossed the State during the month, and two severe ones were experienced. The coldest weather over the southern portion of the State prevailed about the 10th of the month, when the temperature fell to about freezing or slightly below, while the lowest temperatures over the northern and central portions were reported between the 28th and 31st, inclusive.

The precipitation on an average for the State was 1.16 inch below the normal. The rainfall was not well distributed during the month, and was hardly sufficient for farming interests, except over the northeastern portions of the State, where a heavy rainfall was experienced.

Utah.—The first half of the month was comparatively mild and pleasant, with temperatures generally above the normal. During the last half the weather was more or less stormy at intervals, with a severe cold wave on the 28th, which caused the lowest temperatures recorded during the month.

Virginia.—The temperatures averaged slightly below the normal in the tidewater sections, while the deficiency increased to the westward. The total amount of precipitation averaged about or very slightly above the normal near the coast and from 50 to 75 per cent above the normal in the other sections, with more than the average amount of snowfall. The snowfall proved generally beneficial to winter wheat, oats, etc., especially in the northern and western sections of the State.

Washington.—It appears to be the impression of a great many that the weather thus far this winter has been unusually mild in Washington. Such is not the case, and the current month had a mean temperature which was 1½° below the normal. There have been no extremely low temperatures, and, on the other hand, the maximum temperatures were not as high as in former years. In eastern Washington the lowest temperature at the coldest station was only 6° below zero. No violent storms passed over the State, although there were two rather severe ones, which swept the coast. The rainfall was well distributed throughout the month.

West Virginia.—The average temperature for the month was below normal. On the 12th the drop in temperature was phenomenal, the fall varying from 40° to 50° in less than twenty-four hours, and was accompanied by considerable snow. Snowfall was fairly distributed throughout the month.

Wisconsin.—The mean temperature for the month was 3.6° below the normal; precipitation 0.17 of an inch below the average for the month. A very severe storm entered the State from the southwest on the night of the 20th, and continued, with increasing force, during the 21st, passing off to the northeast on the evening of that day. Rain and sleet, accompanied by thunder and lightning, prevailed throughout the central and southern portions on the night of the 20th and early morning of the 21st. This was followed in the afternoon by a westerly gale, with a wind velocity of 50 miles per hour at Milwaukee, heavy snow, and zero temperatures. Another severe snowstorm occurred on the 25th, accompanied by high northeast gales, which drifted the falling snow and caused great inconvenience to railroads. This was followed by extreme cold weather, which continued to the close of the month. The cold was so severe that the ground froze to a great depth, and many complained of vegetables being frozen in the cellars.

Wyoming.—The mean temperature for the month was 20°, which was slightly lower than the average for January. The average amount of precipitation for the State was 0.95 of an inch, which was about one-third greater than the usual January precipitation.

STUDIES BY FORECAST OFFICIALS.

As a preliminary study to active forecast duty the officials of this division are given subjects for investigation from time to time. The following paper, prepared under the direction of Maj. H. H. C. Dunwoody, U. S. A., assigned as Acting Assistant Chief of Bureau, in charge of Forecast Division, is published with his consent.

TYPES OF STORMS IN JANUARY.

By E. B. GARRIOTT, Forecast Official.

Classified with reference to the regions in which they first appeared, the January storms traced in the MONTHLY WEATHER REVIEW during the last ten years fall under the following general heads:

Region in which storms first appeared.	Total number of storms in ten years.
Saskatchewan Valley	32
Southwestern States	21
North Pacific coast	20
Northeast Rocky Mountain slope	8
Middle-Western States	7
Ohio Valley and Tennessee	3
Southeastern States	2
South Pacific coast	0
Total number in ten years	94

About 80 per cent of these storms belonged to what may be termed three principal types. One type, which presented the greatest number, embraced storms that advanced from the Saskatchewan Valley; another included storms that first appeared in the Southwestern States, and the third storms which moved eastward from the North Pacific coast. The remaining storms, which were generally secondary developments to low areas of the three principal types named, were widely distributed, and while their relatively limited number will not justify their acceptance as independent types, the fact that they collectively composed one-fifth of the storms of the month, calls for a consideration of their characteristics as secondary types.

STORMS FROM THE SASKATCHEWAN VALLEY.

Chart 1 shows the tracks of all January storms that entered the region of observation north of Montana and North Dakota during the last ten years. Twenty-one, or fully two-thirds of these storms reached the Atlantic coast, and all but three of this number passed to sea north of the fortieth parallel. The plotted paths show that the usual path of storms of this general type is east-southeast over the Canadian Maritime Provinces, and it may be assumed that similar and well-marked weather and temperature changes and conditions will attend storms of seasonal severity and average speed that follow the average track. It may also be assumed that unusual and particularly notable changes and conditions will be presented in connection with storms that depart from the usual path. The principal problem in practical forecasting is to calculate the direction of movement, speed, and intensity of a storm at the time of its first appearance in a defined district. In the case of Saskatchewan Valley storms we know that two out of three of these storms pass east-southeast to the Atlantic coast north of the fortieth parallel, and that their average velocity is about 37 miles per hour. In discussing these storms, an effort will be made to connect their movements with the general distribution of pressure and temperature, and to point out those conditions which favor normal movements and the causes which seemed to occasion abnormal movements.

A storm remarkable both as regards its direction of movement and speed swept rapidly southeastward from Alberta to

Arkansas, and thence off the Atlantic coast January 13–15, 1893. This storm appeared over Alberta the morning of January 13, and the general conditions which obtained at that time are shown on Chart 9. It is evident that the distribution of pressure and temperature positively prohibits an early eastward movement of the storm. The barometric gradient in that direction is steep, and the temperature is some 50° lower over Manitoba than near the storm's center. In a previous paper the statement was made that isotherms are the leading strings of a storm, and attention was called to the recognized inclination of storms to advance in the direction of least barometric resistance. In the case of this storm both of these conditions favor a movement of the storm down the eastern Rocky Mountain slope, and, as the isobars loop far to the southward, an unusually rapid movement may be anticipated. Chart 10 of the morning of the 14th, shows the 12 and 24 hour movement of the center. It will be observed that the rapidity of the storm's movement, which was at the rate of about 54 miles per hour, did not permit a warming up of the air in the east quadrants of the low area, and upon its arrival in the southwest the isotherms still ran southeastward across its line of advance, with freezing temperature as far south as northern Florida.

Although a sudden and marked rise in temperature might be expected to precede, and very low temperature to follow, the passage of the storm over the east-central districts, the colder air which appeared in its front the morning of the 14th, rather favored a loss of strength. The report of the following morning, Chart 11, shows that the low area flattened or divided against the cold area, and that the separate low areas reunited off the middle Atlantic coast. This storm is an excellent example of the influence of low temperature upon a storm's movement. It was opposed by much lower temperature in its front until it reached the southwest, and in endeavoring to skirt the cold area, nearly perished for lack of warmth, which is one of the sustaining elements of a storm. It followed the path of least barometric resistance, and, encountering but slight opposition in that respect, traveled at a high rate of speed. Owing to its great velocity, low temperature, which is unfavorable to precipitation, preceded and attended its passage, and no precipitation occurred save in the eastern districts where sharp temperature changes and gradients in a moist atmosphere produced a heavy fall of snow throughout the Atlantic coast States north of Florida.

A typical storm of the Saskatchewan Valley type appeared over Alberta, January 20, 1892, and reached the Canadian Maritime Provinces January 23, traveling over the most frequented track of storms of this class at an average velocity of about 39 miles per hour. The daily progress of this storm and the conditions which attended its passage are shown on Charts 12 to 15. The morning reports of the 20th, Chart 12, present conditions which prevailed just before the full development of this storm within the region of observation. At that time a storm occupied the Lake Superior region, and the trend of the isobars and isotherms favored a rapid eastward movement of the Alberta storm. By the morning of the 21st, Chart 13, the Lake Superior storm had moved eastward to a position north of Lake Huron, and the northwest low area had moved eastward over the Saskatchewan Valley a corresponding distance. Between the low areas the pressure had risen. The appearance of a crest of high pressure between low areas moving over the northern districts, can, as a rule, be expected, and the lower temperature and higher pressure can, as in this case, be relied upon to rapidly give way and follow in the wake of the eastern low, allowing the western low area to advance at a normal velocity. In the present instant the high area disappeared during the 21st, and the northwest storm moved eastward over Manitoba, and by the morning of the 22d, Chart 14, had reached Lake Superior. Its after course to the Maritime Provinces was unobstructed, and its passage was unattended with noteworthy features.

Storms of this type, which follow the most frequented path over the northern Lake region, are seldom attended by precipitation until they reach the Lake region, and during their passage thence eastward the rain area is usually confined to the Great Lakes, New York, and New England. Neither are they, as a rule, attended by cold waves, save in the case of the slower moving storms of marked intensity which produce high temperatures in the east quadrants and are followed by a strong sweep of northerly winds. The storms which pursue a more southern course are, however, often attended by areas of precipitation which extend to the Gulf States and by cold waves which reach the southern limit of the barometric trough.

NORTH PACIFIC COAST STORMS.

These storms present characteristics similar to those noted in connection with the Saskatchewan Valley type. A majority of the storms of both types doubtless spring from the extreme eastern limit of the permanent winter low area of the north Pacific Ocean. The north Pacific type of storms as herein classified, however, strike the American coast farther south, and a reference to Chart 3 will show that their tracks are more widely distributed and, on the whole, run farther south than those of the Saskatchewan Valley type. Of the 20 storms of this class traced for the last ten years, 10 reached the Atlantic coast, all, save one, passing to sea north of the fortieth parallel. In this connection it is interesting to note that this result compares closely with figures found in Bulletin A of the Weather Bureau. During the ten years covered by that report an average of 1.8 storm per month appeared on the north Pacific coast and traversed the North American continent in January. The tables found in the Bulletin show that the storms that appear on the north Pacific coast of the United States in winter possess greater vitality than any other class of storms traced over the Northern Hemisphere, and that in a ten-year period 18 storms from that region traversed successively the North American continent and the north Atlantic Ocean during the three winter months.

These storms usually cross the continent in about three days, at an average velocity of 35 to 40 miles per hour. After passing east of the Rocky Mountains they assume the characteristics noted in connection with storms of the Saskatchewan Valley type. The storms that pass well to the southward of the forty-fifth parallel carry precipitation to the Gulf States, and the cold-wave areas, depending upon the storm's intensity and previously existing temperatures, usually cover districts included within the low barometer troughs which are swept by the northerly winds of the storm's west quadrants.

NORTHEAST ROCKY MOUNTAIN SLOPE STORMS.

The northeast Rocky Mountain slope type of storms, Chart 4, also belongs to this general class, but, owing either to unusually rapid movements, which carry them across the mountains between reports, or to slight intensity, they do not appear as fully developed storms until they reach the eastern slope.

SOUTHWEST STORMS.

Probably the most important winter storms of the eastern half of the United States are those which first appear in the southwestern States. About one-half of the storms that reach the Atlantic coast belong to this and kindred southern types, and the rain and temperature change areas are more extended, general, and pronounced than in any other class of storms that traverse districts lying east of the one-hundredth meridian. Storms of this type almost invariably move northeastward, and, unless the conditions are complicated by northwest low areas, they reach the Atlantic coast within forty-eight hours. Storms of average intensity which appear over the

interior of the west Gulf States or on the extreme southern Rocky Mountain slope usually cross the Ohio Valley and the Lake region, attended by general rain or snow over the eastern half of the country, and those which advance from the immediate Gulf coast or from over the west part of the Gulf of Mexico move almost due northeast, producing areas of general rain over the Southern and Atlantic States, the upper and middle Ohio Valley, and the eastern Lake region, and are often attended by cold waves and dangerous gales in those districts. During the last ten years 21 storms have appeared in the southwest in January, and in all but one instance they reached the Atlantic. About one-half of this number crossed the Lake region and passed thence over or north of the St. Lawrence Valley; the others traversed the Atlantic coast States. The general features and characteristics of these storms can best be shown by discussing subtypes of the general type referred to.

A storm of the class that first appears on the extreme southern Rocky Mountain slope advanced from Texas to southern Lake Michigan from the morning of January 8 to the morning of January 9, 1889, crossed Lake Huron and reached a position far to the northeast of Georgian Bay by the morning of the 10th, and passed eastward over Labrador during the 11th. This storm was faintly outlined over the southern Rocky Mountain region on the 7th, and by the morning of the 8th had reached the position shown on Chart 16. By the evening of the 7th rain had set in over the southwest, and by the time the storm had become well marked over Texas the rain area had extended over the Mississippi and lower Ohio valleys. A study of Chart 16 shows that the pressure and temperature distribution favors an almost due northeast movement of the center of disturbance. The path of least barometric pressure resistance lies in that direction, and the northward loop of the isotherms over the Mississippi and lower Ohio valleys shows the region of increasing temperature toward which the storm is likely to move with the favorable pressure conditions presented. As is usual in storms of this class, the rain area which covers the Mississippi Valley can be expected to reach the Atlantic coast within twenty-four hours. It has been observed, however, that when a storm is central in Texas about thirty hours are required for the rain area to overspread New England. The high area over the northern plateau region will move rapidly southeastward and replace the low area in the southwest, causing a decided fall in temperature within the cyclonic area which appears on this chart; in fact, a cold wave can safely be anticipated within the storm area, say within the area covered or surrounded by the isobar of 29.70. Chart 17 shows the movement of the storm during the succeeding twenty-four hours. A notable feature is the rapid deepening of the barometric depression. The other conditions are as outlined in remarks relating to Chart 16. The high area has moved rapidly southeastward, the temperature is some 20° lower in the southwest, and the rain area has extended to the Atlantic coast south of New England, and will extend over that district during the next few hours. As the storm center will now move well to the northward of the St. Lawrence Valley, and the sweep of the northerly winds will not be strong, save over extreme northern districts, temperature falls sufficient to constitute a cold wave can not be expected within the next twenty-four hours, and rapidly-rising barometer in the south and southwest point to a rapid clearing of the weather in the central and southern districts. The report of the following morning, Chart 18, shows the storm well beyond our region of observation, and its further influence will be in the form of diminishing westerly gales along the middle Atlantic and New England coasts and over the eastern Lake region.

The second class of this type of storms first appears near the immediate west Gulf coast, and move northeastward, parallel with, and generally somewhat to the westward of the Appalachian range, and cross eastern New York and New England, the average time of transit being about forty-eight hours. A good example of a storm of this class appeared on the Louisiana coast the morning of January 26, 1889, and the conditions which obtained at that time are exhibited by Chart 19. As rain had been falling over the southern and southeastern districts during the preceding two days, the actual rain area controlled or occasioned by this storm can not well be determined. A study of these storms has shown, however, that when fair weather prevails over the central and eastern districts at the time of the first appearance of the low area on the Gulf coast, the rain area spreads rapidly from the Gulf and covers districts east of the Mississippi and south of the Great Lakes within twenty-four hours and extends over New England within thirty-six hours.

When this storm appeared on the Louisiana coast the morning of the 26th, a trough of low pressure extended thence over the eastern Lake region and the St. Lawrence Valley, and the isotherms looped northward over the Ohio Valley and the lower Lakes. These conditions plainly indicate the direction of the storm's advance, and, as neither pressure gradients nor low temperature oppose the advance of the center, it may be assumed that the movement will be rapid. The rain area, which covers districts south of the Ohio River, may be expected to cover New England within twenty-four hours, and the barometer will rise rapidly with a decided fall in temperature in the southwestern States, the fall constituting a cold wave in the west Gulf States. Chart 20 shows the progress made by the center of disturbance during the succeeding twenty-four hours. The storm has increased in intensity and rain has fallen throughout the central valleys and in the Atlantic coast States. The conditions presented the morning of the 27th seem, at first glance, unfavorable to a normal northeast advance of the storm center. It will be observed that a well-marked area of high pressure has appeared over the Canadian Maritime Provinces, with a decided fall in temperature in that region. Under certain conditions high areas of this class retard, and even force back storms advancing from the interior. When this occurs the northeast high area is usually one of gradual growth and apparently well anchored, and the barometer is relatively low in the north-central districts with a gentle barometric gradient and high temperature for the season in that direction. When, as in the present instance, the western and northwestern districts are covered by an unbroken high area of great magnitude, with much lower temperature to the west and northwest of the low area, the center of disturbance can scarcely recurve in that direction, and may be expected to increase in intensity, warm up the cold area in the northeast by a strong indraught of ocean air, and force a passage along the usual path. So far as January storms are concerned the tracks plotted on Chart 2 show that during the last 10 years the southwest type of storms have, without an exception, continued a northeast course after leaving the Gulf States. The morning report of the 28th, Chart 21, shows that this storm increased greatly in strength and advanced in a direct line toward the Canadian Maritime Provinces, either forcing eastward or dissipating the high area which occupied that region the preceding morning. In the meantime the center of the high area in the west remained nearly stationary and the pressure in the Northwest and over the western Lake region decreased instead of increased, as might have been expected, and increased but slightly in the southwest. The effect of these minus pressure changes in the west and northwest was to delay the clearing of the weather which generally closely follows the passage of these storms, and the cloud and rain area lingered over the Ohio and middle Mississippi valleys, and a decided fall in temperature occurred only in

the cleared region which covered the interior of the southwestern States.

A representative storm of the third class of low areas of this type (that is, those storms which appear fartherest south and cross the west part of the Gulf of Mexico and pass thence northeastward over the east Gulf, south and middle Atlantic States) first appeared near the mouth of the Rio Grande River the morning of January 23, 1891, advanced to central Alabama by the morning of the 24th, moved thence northeastward off the middle Atlantic coast during the early morning of the 25th, and disappeared in the direction of Nova Scotia during the latter-named date, traversing the territory lying between the mouth of the Rio Grande and a point off the southeast New England coast in forty-eight hours. Chart 22 shows the first indications of the presence of this storm off the mouth of the Rio Grande River. The exact location of the center can only be surmised, but a calculation based upon the well known persistency and uniformly rapid movement of this class of storms, and the absence of a pressure gradient to the northeastward, would give the storm a movement to the middle Gulf States within twenty-four hours, and as precipitation is one of the first well-marked features of these disturbances, rain could be expected over a large area of the Southern States. Within twenty-four hours the center of this storm had advanced to Alabama, and Chart 23, of the morning of the 24th, presents no material obstacle calculated to prevent the storm from continuing a northeast course. The area of high pressure on the middle Atlantic coast has shifted to that position from the south Atlantic coast and is moving; it will not, therefore, oppose the advance of the storm, more especially as the temperature is high and the direction of the isotherms is northeast from the storm center. As the barometer has risen rapidly in the rear of the storm, forming a high area in the southwest, a rapid rise of pressure and rapidly clearing weather will follow closely in the wake of the storm. Like storms that traverse the Atlantic coast States from the Gulf, this low area was unattended by marked changes in temperature in the Atlantic coast districts. The storms that appear over the east Gulf and the east Gulf States in January generally belong to the type herein considered, and do not, therefore, call for individual mention.

GENERAL REMARKS.

From the foregoing charts and remarks it would appear that the storms of January belong to three, and possibly to but two, general types which may be subdivided into a limited number of classes. We have seen that fully one-half of our January storms advance from the Saskatchewan Valley and the north Pacific coast, and that of these types the storms of the first-named type are the most numerous. Many, if not all, of the Saskatchewan type are of Pacific coast origin, and the two types can, therefore, be properly combined and termed the north Pacific type, the difference being merely that the storms traced on Chart 10 reach the coast farther south than those of the Saskatchewan Valley type. A large proportion of these storms doubtless originate near the American coast, and do not advance from the Bering Sea permanent winter low area. The plotted tracks of storm in Weather Bulletin A show that at least four-fifths of the storms that appeared on the Pacific coast north of the mouth of the Columbia River during a period of ten years first appeared near the coast, and did not actually travel eastward from the north Pacific or Bering Sea low area. The Bering Sea low area loops far to the eastward and reaches the Alaska coast in the neighborhood of Sitka in January, and this circumstance, taken in connection with the fact that the cold Arctic current flowing southward through Bering Sea Straits and the warm Pacific drift current meet south of the Alaska Peninsula, presents conditions which doubtless largely contribute to the development of storms off the Alaska coast south of the Alaska Peninsula.

The three branches representing the average paths of the north Pacific type of storms are shown on Chart 25. The north, or Saskatchewan branch, and the north Pacific branch, converge and meet in the St. Lawrence Valley, and the northeast Rocky Mountain branch swings slightly to the southward of the north Pacific branch over the northwestern States, and crosses and passes to the northward of the Saskatchewan Valley branch northeast of Georgian Bay. A result of the more southern path of the north Pacific and northeast Rocky Mountain slope storms is to carry precipitation and marked temperature change areas farther south, and these storms are more liable to be attended by secondary developments still farther to the southward, thereby causing general rain or snow over a great extent of country.

The second principal type, which embraces storms that first appear in the southwest, is also divided into three branches, all of which run almost due northeast. Storms of this class doubtless develop in the lee of the southern Rocky Mountains in the United States and to the eastward of the mountain ranges of Mexico, and an important element of their origin is found in the meeting over those regions of the warm, moist, easterly winds, which blow off the Gulf of Mexico, and which are really the western edge of the north Atlantic trade winds, and the cold, dry, northwest to north winds which sweep southeastward and southward along the eastern Rocky Mountain slope. As before stated, the storms of this principal type are the most important that traverse the eastern half of the United States in January. They are attended by widespread and abundant precipitation and decided temperature changes, and are the most methodical storms as regards their direction and velocity of movement that appear within the region of observation.

COLD WAVES.

A discussion of winter storms and weather would be incomplete without a reference to cold waves. The conditions producing and attending these phenomena are so complicated, however, that even a general discussion of the subject, calculated to prove instructive to forecasters, is attended by marked difficulties. The resolving into types of the innumerable combinations presented in connection with the development and appearance of cold waves, is an extremely difficult if not an impossible task, and the scope of this paper will admit of only a general discussion of their more prominent characteristics, and of a few remarks touching upon recognized conditions favorable to their entry into and progress over the United States. The visible mechanism of a cold wave embraces the cyclonic and anticyclonic areas which traverse the United States from west to east. The low areas warm up the surface air by the southerly winds in their east quadrants, and the cold, dry, northerly winds in their west quadrants that usher in the succeeding high area from the British Northwest Territory, occasion a marked fall in temperature which is termed a cold wave. It is evident, therefore, that generally speaking, the region covered by a cold wave must be successively subjected to the wind circulation of the east and west quadrants of a well-marked low area. It is also evident that the cold waves of the several sections are practically dependent upon the passage of low areas followed closely by unbroken high areas.

Thus far the mechanism seems simple and easily understood, and if the movement and strength of the high and low areas could be accurately foreseen, the forecasting of cold waves would be one of the simplest instead of one of the most difficult features of weather forecasting. As a matter of fact each of the many districts of the United States presents geographical and topographical features calculated to

modify or intensify approaching cold waves. The probable intensity of a cold wave must be calculated for the varying conditions peculiar to each of the districts, and in many instances for conditions peculiar to localities. Unlike warm waves, which often produce in the central and northern districts temperatures higher than those noted in more southern latitudes to the windward, cold waves are not attended in the central and southern districts by temperatures lower than those noted to the north and west. On the contrary, the cold waves diminish in intensity as they sweep south and east, so far as the degree of actual cold is concerned, although the temperature may be relatively lower with reference to the normal temperature. As cold waves approach the moist regions of the Great Lakes and the Gulf and Atlantic coasts, conditions must be very marked to insure their overspreading those districts. For, as cold waves follow general storms, and as areas of precipitation, and even of cloudiness, are generally fatal to the advance of a cold wave, the forecaster should be very certain that the weather will clear up in a district before ordering cold-wave signals for that district.

Herein lies the difficulty of verifying cold-wave signals in the coast and Gulf regions; for the weather is often slow to clear up in the Gulf and Atlantic coast States, and in addition, there sometimes appears to be a slight fœhn effect produced in districts to the leeward of the Appalachian range of mountains; this, however, has not been proven. In the Southern States cold waves can rarely be successfully forecasted unless a well-defined low area crosses that region, followed by a well-marked and unbroken high area which has occasioned a decided cold wave in districts to the west or northwest. Twenty-four to thirty-six hours are usually required for a cold wave to advance from Texas to the south Atlantic coast. In January the cold waves of the central and northern districts attend the passage of the general type of storms that pass eastward from the north Pacific coast and the Saskatchewan Valley. As these cold waves drop down from the British Northwest Territory in the rear of and immediately follow the storms of this type, they assume corresponding velocities. The average time for a cold wave to advance from the British Northwest Territory to the middle Atlantic and New England States would, therefore, be sixty to seventy-two hours. But as the storms vary in velocity, so would the time required for a cold wave to sweep the northern regions vary. In all cases the velocity of cold waves must be governed by the velocity of the low areas and of the succeeding high areas, and their intensity upon the observed temperature distribution, and the intensity of the low and high areas which promote, sustain, and propel them.

NOTES BY THE EDITOR.

LOCAL CONTRAST OF WEATHER AT LONG BRANCH.

Mr. W. D. Martin, displayman U. S. Weather Bureau, Long Branch, N. J., reports that—

On January 29, in the morning, along the beach at that place the temperature was high and spring-like, but that two blocks back from the beach, namely, about 500 feet, it was cold and raw, and also snowing, with a light northeast wind, and that he had never experienced any phenomenon like this during sixteen years' residence on the coast. The reverse phenomenon is quite common, viz, in the summer time there occurs cold and raw weather along the beach with a west and northwest wind, while it is very hot at a little distance back. The latter phenomenon seems easily explained but the former not.

The inland temperatures at 8 a. m. and 8 p. m. were: Philadelphia, 18 and 24; New York, 18 and 24; Atlantic City, 22 and 24. Apparently the northeast wind had blown relatively warm surface water on to the New Jersey shore so that the local sea breeze was warm and moist, but as it penetrated inward and rose it mixed with the cold land air and the moisture was precipitated as snow.

THE ICE CROP FROM A METEOROLOGICAL POINT OF VIEW.

The observer at Clinton, Iowa, states in his January report that the cleanest and most transparent ice ever harvested was gathered during this month. Mr. J. Warren Smith, editor of the Bulletin of the New England Weather Service, states that observations show that the coldest places in New England are in the deep narrow valleys in the mountain regions, so we naturally expect the ice to form thicker on ponds in valleys during a cold spell.

Mr. W. R. Perry, of New London, Conn., inquires: "Have you any information that will enable me to choose the best location for an ice pond on the line of the New London Northern Railroad? Notwithstanding the general fact that the valleys are colder than higher ground in the same vicinity, my experience is that the higher up the pond is located the thicker the ice. Thus, at Belchertown, Mass., in 1890, the ice measured several inches thicker at the pond on the hill than at another pond in the valley a mile to the northward. At Winchester, N. H., the ice on Forest Lake was always thinner than in the pond on top of the mountain near by." He has noticed that a pond exposed to the wind at low temperatures froze rapidly after the wind went down, and usually overtook a less exposed pond that had several inches the start. He thinks that water kept in motion while cooling, so as to prevent freezing on the surface, produces anchor ice. "The best quality of ice comes from either of two reasons, sufficient depth of pond, say 30 feet, or a sufficiently rapid current to remove the air which gives it a white, transparent look." The inquiry thus started by the New England Weather Service has a very considerable practical value and theoretical interest. On the one hand observers near water ponds and streams, and the keepers of reservoirs, can contribute much to our knowledge of this subject by keeping a daily record of the temperature of the water at the surface, and also at several depths, in both the shallow and deep portions of the ponds. The records should be kept up throughout the year and studied with regard to the influence of winds and clear sky. On the other hand a theoretical study into the mode of action of whatever may influence the temperature is necessary in order to properly utilize such observations in explaining the past or predicting the future quality of the ice or in locating the best ice ponds.

A SILENT ELECTRICAL AND DUST STORM IN OKLAHOMA.

Dr. J. C. Neal, director of the Oklahoma Agricultural and Mechanical College, reports as follows:

During the morning of January 20 the sky was filled with cirrus clouds, very feathery and white. In the afternoon it became hazy, then dark, and looked like rain. Wind in puffs from the southwest. At nightfall the sky cleared, but somewhat hazy. At 8 p. m., seventy-fifth meridian time, the wind changed to the west, and a gale began; by 9 p. m. it was frightful. The dust passed along in columns fully 1,000 feet high, the wind arose to a speed of 35, then 45 miles per hour, with gusts reaching 55 miles, the temperature fell rapidly, and we saw for the first time (about 9 p. m.) flashes of light that apparently started from no particular place, but pervaded the dust everywhere. As long as the wind blew, till about 2 a. m., January 21, this free lightning was everywhere but there was no noise whatever. It was a silent electrical storm. This morning the sky is clear and except that the dirt is piled up over books, windows, and in all the house, no one would know what a fierce raging of wind and sky we had.

OBSERVATIONS AT HONOLULU, HAWAIIAN ISLANDS.

As the weather on our Pacific coast depends so largely upon the conditions of the atmosphere to the westward, it is considered important to publish in full and as soon as practicable the data furnished by observers in Alaska, the Hawaiian Islands, and adjacent regions.

Meteorological observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, Meteorologist to the Government Survey.

Pressure is corrected for temperature and reduced to sea level, but the gravity correction, —0.06, is still to be applied.

The absolute humidity is expressed in grains of water, per cubic foot, and is the average of four observations daily.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10.

The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.

January, 1895.	Pressure at sea level.			Temperature.					Humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
									Relative.						
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	9 a. m.	9 p. m.	Absolute.	Direction.	Force.		
	Ins.	Ins.	Ins.	°	°	°	°	°	%	%					Ins.
1..	30.15	30.07	30.12	62	77	67	78	61	74	80	6.2	se-sw.	2	3	.00
2..	30.06	29.93	29.96	62	73	65	77	61	70	87	6.2	nw-s.	2	3-8	.00
3..	29.92	29.82	29.91	66	74	71	75	64	79	85	6.9	s.	3	10-4	.04
4..	29.96	29.91	30.02	71	74	78	78	70	77	92	7.5	sw.	2	10-8	.00
5..	30.04	29.93	30.01	67	75	68	76	66	90	90	7.0	s.	0	10	.26
6..	30.02	29.90	29.97	62	71	64	76	62	90	85	5.9	nw-sw.	1	10-0	1.46
7..	30.00	29.93	30.01	58	74	61	75	58	64	85	5.0	s.	0	0	.00
8..	30.04	29.98	30.04	62	74	68	77	59	79	90	6.3	s.	1	4	.00
9..	30.06	29.96	30.01	67	77	69	79	67	79	95	7.0	s.	2	3	.00
10..	30.00	29.89	29.96	67	75	69	79	67	78	85	7.5	sw.	1	2	.08
11..	29.97	29.89	29.94	71	76	71	79	69	80	79	7.4	sw.	3	6	.00
12..	29.95	29.90	29.98	72	75	71	76	69	80	88	7.5	sw.	3	9	.00
13..	30.04	29.97	30.06	71	76	71	78	70	83	88	7.7	sw.	1	8	.06
14..	30.04	29.98	30.05	71	75	73	76	70	77	73	6.9	ne.	2	10	.05
15..	30.05	29.94	30.04	72	76	73	76	72	74	74	6.5	ne.	4	8	.00
16..	30.07	29.98	30.06	72	74	72	76	72	70	76	6.2	ne.	4	10	.00
17..	30.06	29.99	30.06	70	74	72	75	70	77	80	6.9	se.	0	10	.00
18..	30.09	30.01	30.06	69	75	72	77	68	75	75	6.7	se-e.	3	5	.08
19..	30.12	29.99	30.07	71	73	70	75	70	77	80	6.2	e-ne.	4	7	.01
20..	30.08	30.04	30.06	70	74	71	76	68	70	70	6.0	ne.	4	8	.09
21..	30.02	29.95	30.01	69	76	70	77	69	66	70	5.8	ne.	3	3	.01
22..	29.99	29.88	29.96	60	74	69	76	60	68	74	5.7	nnw-nne	3	3	.01
23..	29.95	29.89	29.96	59	76	63	77	59	74	85	5.5	se.	2	3	.00
24..	29.92	29.85	29.90	60	75	70	76	59	73	73	6.0	s.	2	2	.00
25..	29.95	29.93	30.03	68	70	65	73	65	75	50	4.7	nw.	2-5	10-0	.13
26..	30.08	29.98	30.02	62	70	63	72	61	58	56	4.1	n.	3	3	.00
27..	30.02	29.93	29.94	54	73	57	74	53	59	82	4.6	n-sw.	1	2	.00
28..	29.92	29.83	29.92	55	74	70	75	55	71	72	5.0	s.	2	3	.00
29..	29.88	29.84	29.92	66	73	66	77	63	66	90	6.1	sw.	3	8	.00
30..	29.94	29.86	29.92	64	72	67	74	61	85	92	6.4	sw.	3	8	.17
31..	29.90	29.83	29.89	64	74	68	75	63	85	90	6.9	sw.	3	3-8	.39
	30.01	29.93	29.99	65.6	74.2	68.5	76.1	64.5	74.9	80.4	6.3	....	......	......	2.79

Pressure, 29.968, or 0.04 below normal.
Temperature, 69.4, or 0.4 below normal.
Relative humidity, 5 per cent above normal.
Rainfall, 70 per cent of the normal.
Heavy swell of the sea from the north on the 17th.
Northerly gale, cold wave, very low humidity, 26th to 28th.
General earthquake through the group, *not* from Kilauea, 10 p. m., 23d.

OPTICAL PHENOMENA.

Dr. Luke Roberts, at Clinton, Iowa, reports the following interesting optical phenomenon:

A solar halo of unusual interest prevailed all the afternoon of the 15th. Above the sun and near the zenith appeared a segment of a parhelic circle, with its convexity toward the sun. This prismatic beauty, which lasted over an hour, occupied about one-fourth of a complete circle, and formed a line of demarcation of clear sky from its concavity northward and of light clouds to the southward of its convexity. Parhelia, or mock suns, formed to the right and to the left of the sun, becoming more interesting toward the close of the day by their enlarged appearance and prismatic colorings. On the 30th a rare phenomenon was seen, being luminous beams reaching upward and also downward from the moon just previous to its setting.

The 31st furnished the most gorgeous sunset ever witnessed here. In addition to the intense glow which spread out in dazzling splendor, a broad colored band, resting on the sun, reached upward several degrees. All this beauty soon faded and the day and the month ended.

At Mount Sterling, Ky., January 13, 10 p. m., the voluntary observer, Mr. James O'Connell, observed a vertical column of light above and below the moon in a clear sky; it extended above the moon about one-quarter of the altitude of the moon above the horizon; the lower half of the column below the moon widened out at the middle point, and was about four times as broad at the horizon as it was in its upper portion. In answer to a request for an explanation of this phenomenon the editor would remark that almost every form of halo and optical phenomena has been explained by Bravais in his work on halos, Paris, 1847; other forms of phenomena, especially the polarization of skylight, has been explained more recently by Bosanquet and Rayleigh. A summary of our present knowledge of the subject is given by Mascart in his "Optics."

The general explanation of the vertical columns, as observed at Mount Sterling, is as follows: The clear sky contained innumerable minute crystals of ice, such as when aggregated together form the feathery flakes of snow and the beautiful frost-work. These crystals are, when examined microscopically, usually seen to be six-sided prisms, whose ends are formed of six facets symmetrically arranged around a central facet that is perpendicular to the axis of the crystal. Sometimes the ends are simply broad hexagonal plates, so that the prism, with its two end plates, looks like a long and delicate spool. Sometimes only one plate is present, at other times the prism is absent and the plates alone are present. In fact, whatever varied form the crystals and snowflakes assume they may be considered as built up of thin six-sided plates. All the phenomena of halos, parhelia, and columns of ice are the result of the reflection and refraction of sunlight, or moonlight, by these crystals. When the air is quiet and the minute crystals are settling very slowly downward to the earth there will always be found a large number that are in very similar positions. Thus, if the sky is full of long prisms, each of which has a small plate at one end, these will have their long axes nearly vertical; the plates will be above and act as parachutes to delay the fall of the prisms, consequently the plates will be nearly horizontal, or possibly, vibrating for a few degrees either side of horizontality. If the prism is short and the plate broad then the oscillations will be larger than for long prisms.

PARHELION, JANUARY 27, 1895.

Mr. Axel F. Elfstrum, voluntary observer at Willmar, Minn., communicates a description of a very fine parhelion observed on Sunday, January 27, between 9–10.30 a. m. As the drawing sent by the observer can not be easily reproduced the following description will suffice to enable the reader to reconstruct it. Imagine the sun at an altitude of 15° to 25°, and a horizontal circle (P) passing through it; the principal mock suns lay in this circle, which was itself a clear bright band as broad as the diameter of the sun and stretching all around the heavens and having therefore the zenith as its center.

This circle is usually called the "parhelic" circle. Two other arcs were also visible between the sun and the zenith. The larger of these (L) had the zenith for its center with a radius of 45° or 50°; the smaller one (S) also had the zenith for its center and a radius of 20° or 30°. The arcs (L) and (S) differed from (P), in that they did not entirely surround the heavens, and especially in that they were brilliant rainbows, whereas P was bright but colorless. Two other bright bands were also seen; these were also circles and were colorless and very bright; these surrounded the sun as a center. The smaller one (C) appears to have had a radius of about 20°, and the larger one (CC) had a radius twice as great, or 40° to 45°. The rainbow circle (L), was tangent to the upper edge of the bright circle (C) and the rainbow circle (S) was tangent to the bright circle (CC). At the two points where the bright circle (CC) intersected the parhelic circle (P), there appeared two "mock suns" so sharp and bright that it was almost impossible to look at them with the naked eye. When the sun was southeast of the observer these two "mock suns" were respectively a little north of east and a little east of south. Farther along on the parhelic circle there were seen two other "mock suns" almost equally bright. These were respectively at the west-southwest and north-northeast points of the compass, or 112° west and 112° east of the sun. The sky was clear but the air filled with light frost; the wind was northwest, and the thermometer read —24° F.

The general explanation of the formation of halos and parhelia was first elaborated by Bravais and published in

1847 in the Journal of the Polytechnic School at Paris. These phenomena depend entirely on the refraction and reflection of sunlight from the ice crystals that make up the snowflakes. The elementary crystal is a regular hexagonal plate; prisms that are so long as to be called needles may be made up of such plates laid on top of each other, in which case the hexagonal prism sometimes has a flat end, sometimes it is a hexagonal pyramid, and more often it is a truncated, namely, an incomplete, pyramid. When the sky is clear and the temperature very low the air seems to be transparent or hazy, although it is filled with a great number of these prisms, sufficient to give us reflected "mock suns," while at the same time the sun itself is perfectly visible. When the air is still the plates and prisms and simpler forms of snowflakes descend so slowly that myriads of them get into a vertical or horizontal, or some other stable position as they slowly settle down to the earth. According to the experiments and observations of Bravais the smaller bright circle (C) should have a radius of about 22° and the larger circle (CC) a diameter between 43° and 50°, depending on the altitude of the sun. The larger rainbow circle (L) and the smaller rainbow circle (S) depend upon the dispersion of the rays of light that pass through prisms which are nearly vertical, as they settle down through the atmosphere; the ray of light enters the upper and leaves the lower end of the prism. The small rainbow circle (S) approaches to within 21° 50′ of the sun, and therefore appears to be tangent to the large bright circle (CC). It is, however, not an exact circle, but only approximately so. The large rainbow circle (L) is also only an approximate circle, and at its nearest approach to the sun it is distant from it by an angle of from 20° to 25°, depending on the altitude of the sun. It is therefore apparently tangent to the small bright circle (C).

Observers who have an opportunity to make exact angular measurements by means of a sextant would contribute much to the explanation of parhelic phenomena if they would measure the altitude and azimuth of the sun and the "mock suns," the ends of the arcs or rainbows, and the widths and diameters of the circles.

SNOW DUST.

On the night of January 11-12 and along the advancing edge of a cold wave there fell throughout a large part of Indiana and Kentucky a shower of dust in connection with snow. It does not appear that this dust was the nucleus of snowflakes, but that it was intermingled in the air with the snow or fell with the wind that preceded the second snowfall. Considerable interest having been excited and numerous inquiries having been addressed to the Weather Bureau, it was decided to send circulars of inquiry to voluntary observers and others, with a view to obtaining samples of the dust and some idea of its geographical distribution. A few replies indicate that no dust was seen in their neighborhood. Other observers were so fortunate as to obtain samples, which were forwarded to the Weather Bureau for examination and referred to the experts of the Department of Agriculture. A few local experts also made independent examinations and communicated their results to the Weather Bureau.

The following is a summary of our knowledge of this subject:

Persons reporting that no dust fell.

N. I. Kithcart, Columbia City, Whitley Co., Ind. The observer says that Fort Wayne, 20 miles east of this city, is the nearest place at which dust is reported.
W. H. Guthrie, Gas City, Grant Co., Ind.
Postmaster, Portland, Jay Co., Ind.
John M. Lockwood, Mount Vernon, Posey Co., Ind.
Charles G. Boerner, Vevay, Switzerland Co., Ind.
C. B. Magers, Churubusco, Whitley Co., Ind.
Rev. E. J. Spelman, Cambridge City, Wayne Co., Ind.
H. H. Swain, South Bend, St. Joseph Co., Ind.
M. A. Spake, Bluffton, Wells Co., Ind.
J. N. Roe, principal of normal school, Valparaiso, Porter Co., Inda.
Elisha Jones, Princeton, Gibson Co., Ind. No snow on the 12th, little snow on the 13th, but no snow dust in Gibson County.
Stevens & Durham, Muncie, Delaware Co., Ind.
Prof. Malverd A. Howe, Terre Haute, Vigo Co., Ind.
Walsman Bros., Batesville, Ripley Co., Ind. No dust fell here, but did fall in southern part of Ripley County.

Persons reporting dustfalls in connection with the snow, but not sending samples.

Walton & Whistler, Atlanta, Hamilton Co., Ind.
Tipton Lumber Company, Tipton, Tipton Co., Ind.
William McGrew, Huntington, Huntington Co., Ind., and 10 miles north thereof.
Prof. H. A. Huston and W. J. Jones, jr., Purdue University, Lafayette, Tippecanoe Co., Ind.
G. A. Stanton, Greenwood, Johnson Co., Ind.
Postmaster, Albany, Delaware Co., Ind.
T. E. Huston, Cannelton, Perry Co., Ind.
W. E. Horn, Cloverdale, Putnam Co., Ind.
John Johnson, jr., Bedford, Lawrence Co., Ind.
Frank H. Park, Scottsburg, Scott Co., Ind.
—— ——, Upland, Grant Co., Ind.
William H. Smith, Cutler, Carroll Co., Ind.
A. S. Chapman, Madison, Jefferson Co., Ind.
M. H. Thomas, Galveston, Cass Co., Ind.
Postmaster, Bridgeport, Clark Co., Ind.
S. T. Mc——, Vincennes, Knox Co., Ind.
W. J. Davison, Farmland, Randolph Co., Ind.
J. Swindell & Bro., Plymouth, Marshall Co., Ind.
James P. White, Degonia Springs, Warwick Co., Ind.
H. T. Simons & Co., Bloomington, Munroe Co., Ind.
H. Shireman, Martinsville, Morgan Co., Ind.
Bolivar Robbe, North Lebanon, Boone Co., Ind.
J. R. Sample, Princeton, Gibson Co., Ind.
Jonathan Beard, Star Fruit Farm, Edwardsville, Floyd Co., Ind.
C. R. Hincle, Sullivan, Sullivan Co., Ind.
C. W. Whitney, Hammon, Lake Co., Ind.
John T. Hoover, Wabash, Wabash Co., Ind.
C. F. Hale, Butlerville, Jennings Co., Ind.
John Wilkinson, Middletown, Madison Co., Ind.
G. W. Mayfield, Bruceville, Knox Co., Ind.
J. T. Whitlock, Rising Sun, Ohio Co., Ind.
W. N. Wirt, Rockville, Park Co., Ind.
H. S. Renick, Greencastle, Putnam Co., Ind.
O. S. Martin, Russiaville, Howard Co., Ind.
E. T. Neidhamer & Bros., Hobbs, Hamilton Co., Ind.
B. T. Michels, Albion, Edwards Co., Ind.
E. Wesseler, Rockport, Warwick Co., Ind.
C. Ingemann, Noblesville, Hamilton Co., Ind.
G. N. Moyer, Laketon, Wabash Co., Ind.
G. Stealy, Angola, Steuben Co., Ind.
David W. Shields, Rensselaer, Jasper Co., Ind.
Gus. Gramelspacher, Jasper, Du Bois Co., Ind.
Chas. R. Kluger, Huntingburg, Du Bois Co., Ind.
Geo. E. Walton, Clinton, Vermilion Co., Ind.
N. I. Kithcart, of Columbia City, Ind., reports dustfall at Fort Wayne, Allen Co., Ind.
H. L. Bruner, of Irvington, Ind., reports dustfalls at other places, viz, Crown Point, Lake Co., Ind.; Elnora, Daviess Co., Ind.; Spencer, Owen Co., Ind., and Elva, Marshall Co., Ky.

Localities reporting dustfalls to the Louisville Courier Journal:

Burkesville, Cumberland Co., Ky.
Slaughtersville, Webster Co., Ky.
Narrows, Clay Co., Ky.
Iron Hill, Crittendon Co., Ky.

The following is from the Illinois State Weather Service, "Weather and Crops," March, 1895:

On the morning of January 11, observers in the southern counties of Illinois found the snow covered with a dark dust that was apparently foreign to that part of the country; this dust was examined by B. T. Maher, of Albion, Edwards County, and T. J. Trevillion, Golconda, Pope County.

Persons reporting the character of the dust, as resulting from examinations made by themselves.

English (formerly French Lick), Orange Co., Ind.
Brownstown, Jackson Co., Ind.
Spencer, Owen Co., Ind.
Covington, Fountain Co., Ind.
English, Crawford Co., Ind. (newspaper clipping).
Chemical Laboratory, High School, Indianapolis, Marion Co., Ind.
Butler University, Indianapolis, Ind.
Bruceville, Knox Co., Ind., G. W. Mayfield, M. D.

Persons sending samples to the Weather Bureau for examination.

Dr. J. N. Harroty, Indianapolis, Marion Co., Ind.
Robert Hessler, Logansport, Cass Co., Ind.
Dalton Wilson, Greenwood, Johnson Co., Ind.
Calvin Fletcher, Spencer, Owen Co., Ind. (2 samples.)
A. N. Johnson, New Ross, Boone Co., Ind.
F. Thrasher, Smithville, Monroe Co., Ind.
W. H. Stanton, Pendleton, Anderson Co., Ind.
Prof. Drybread, Anderson High School, Anderson, Madison Co., Ind.
W. Crane, Covington, Fountain Co., Ind.
W. P. Gosnell, and Fred. Friedersdorff, Madison, Jefferson Co., Ind.
John Kennedy, Vincennes, Knox Co., Ind.
George Tindale, through S. B. Morris & Co., Shelbyville, Shelby Co., Ind.
D. H. Hostetter, through J. F. Warfel, Ladoga, Montgomery Co., Ind.
G. H. Morgel, Brazil, Clay Co., Ind.
J. Oouthout, Surprise, Jackson Co., Ind.
J. E. Young, Topeka, Lagrange Co., Ind.
Butterworth & Co., Marion, Grant Co., Ind. (2 samples possibly from different localities.)
W. B. Squire, Worthington Greene Co., Ind.
Z. Warren, Carmel, Hamilton Co., Ind.
A. Hugh Bryan, Lafayette, Tippecanoe Co., Ind.
A. Hugh Bryan, Indianapolis, Marion Co., Ind.
D. N. Berg, Indianapolis, Marion Co., Ind.
Mr. Perry Philipps, Pigeon, Spencer Co., Ind.
William Hart, Quincy, Owen Co., Ind.
—— ——, Pimento, Vigo Co., Ind.
Lafe Crosier, Laconia, Harrison Co., Ind.
J. B. Pence, Crawfordsville, Montgomery Co., Ind.
Mrs. Belle B. Peyton, Crawfordsville, Montgomery Co., Ind.
Jas. O. Parker, Danville, Hendricks Co., Ind.
H. P. Heller, Brownston, Jackson Co., Ind.
David Grable, Corydon, Harrison Co., Ind.
N. Wilson, through R. H. and J. N. Dean, Iron Hill, Crittenden Co., Ky.
H. L. Bruner, Irvington, Marion Co., Ind.
Shirk and Miller, Peru, Miami Co., Ind.
Joseph Miller, Iris, Harrison Co., Ind.
Oscar Brent, English, Crawford Co., Ind.
John Wilkinson, Middletown, Henry Co., Ind.
George B. Jordan, Morristown, Shelby Co., Ind.
Dr. T. C. Hunter, Kokomo, Howard Co., Ind.
The "Evening Tribune," Greenfield, Hancock Co., Ind.
W. F. Taylor, Thorntown, Boone Co., Ind. (It is probable that this was collected on March 25th, and this address is therefore properly transferred to the subsequent list under section H.)

The reports of Messrs. Galloway and Woods on the character of the samples sent to the Weather Bureau.

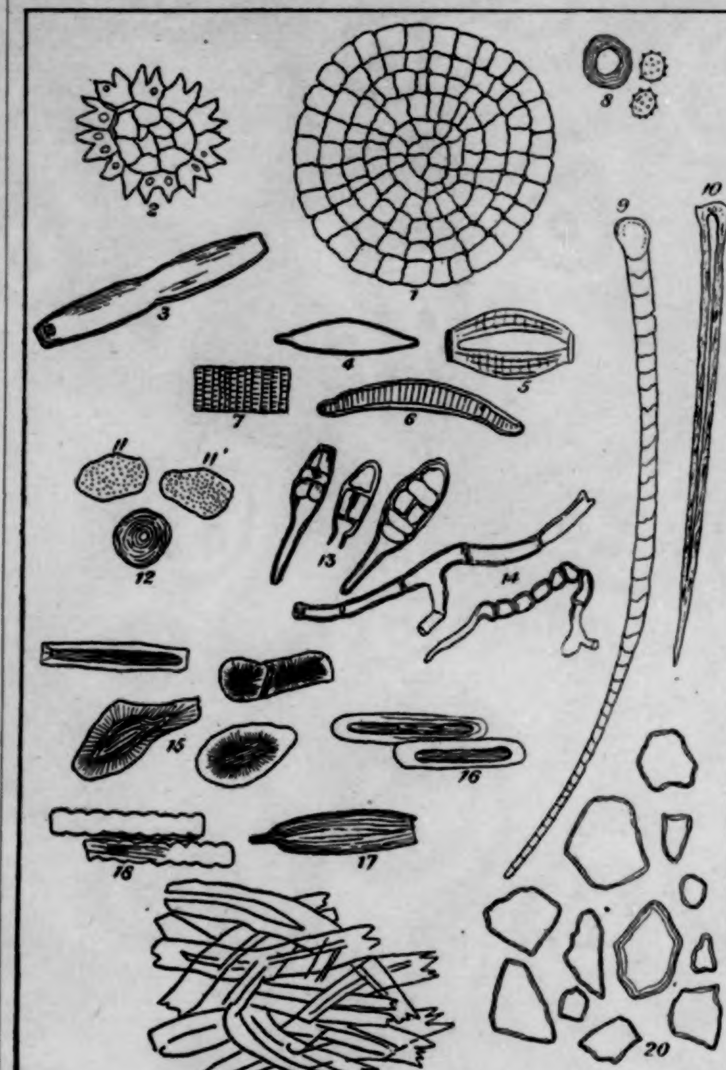
The samples in the above-mentioned list were sent to the Division of Vegetable Pathology with the request that they be subjected to a microscopic, and, if necessary, a chemical examination. The reports of Messrs. Galloway and Woods, as sent in from time to time, may be summarized as follows:

DEPARTMENT OF AGRICULTURE,
DIVISION OF VEGETABLE PATHOLOGY, *January* 31, 1895.

I have submitted to my assistant, Mr. Woods, the sample of soil supposed to have fallen in Indiana, between two snowstorms, January 11, 1895, and he furnishes the following report:

"The soil is made up largely of silt, mixed with organic matter. A number of fresh-water algæ could be distinguished, though they had evidently been dead and dried for a long time. Two of these, viz, Coleochæte, and a Desmid, possibly *Closterium*, indicate that the source of the 'dirt' was the bottom of some shallow lake, pond, or marsh that had dried up. These two algæ usually grow in water that is comparatively fresh, and which seldom dries up completely. Another algæ, viz, *Pediastrum*, and an animal plant, *Euglena viridis*, show that for some time the water had been stagnant. The Diatoms are found wherever there is water. A fungus belonging to the genus *Macrosporium* was also found. This occurs very commonly on dead plant tissue. The epidermal cells of decayed grasses and sclerotic cells from the decayed fruits of grasses occur in the débris. Animal and plant hairs are common, also bast fibers of grasses, shreds of woody tissue of some shrub or tree, etc. Masses of mixed and interlaced fibers looking like paper are occasionally seen. Everything indicates that the 'dirt' came from the bottom of some dried-up lake, pond, or marsh, or some river bottom. It would be well to look for some such place as this on the windward side near where this material was gathered. It is, however, light enough to be carried some distance by a strong wind. The plants found have wide distribution and are common all over Indiana, and in fact all over the whole of North America, at least."

The accompanying drawings show some of the material present in the dirt. Fully 96 per cent of it is silt, and 4 per cent organic matter.



1. Coleochæte orbicularis.
2. Pediastrum sp.
3. Desmid.
4, 5, 6, 7. Group of diatoms.
8. Pollen grains.
9. Animal hair.
10. Plant hair.
11. Euglena viridis.
12. A little fresh water animal.
13. Macrosporium spores.
14. Mycelium of Macrosporium.
15. Group of sclerotic cells.
16, 18. Epidermal cells of grass.
17. Butterfly scale.
19. Piece of paper.
20. Soil, silt.

February 4, 1895.—The second sample of dust is somewhat richer in organic matter, but is of exactly the same nature as the first.

February 23, 1895.—The additional samples of snow dust have been examined by my assistant, Mr. Woods, who reports as follows:

"The samples from Crawfordsville, Greenfield, Morristown, Covington, Vincennes, Indianapolis, Smithville, Logansport, Greenwood, Spencer, in Owen County, New Ross, Indianapolis and Lafayette, all in Indiana, also from Stattler, Ark.—dustfall of February 7—are all fine silt, containing organic matter almost exactly as described for the sample first sent to us. They all indicate a locality such as therein described. The remarks made on this first sample apply in every particular to those named in the preceding list. These samples contain no soot from chimneys or gas wells or ash from the northwest forest fires. The dark color is due to the presence of a coating of dissolved organic matter on the particles of silica and the presence of decaying organic matter mixed with the silica. The dust may have come from the northwest from some dried-up marsh, lake, or pond. There is nothing in the material to give any definite indication of the region from which it came. The same material might be found in dried-up lakes, ponds, marshes, etc., almost anywhere on this continent."

"All the samples indicate that the dust was lifted by some windstorm, spread out in an upper-air stratum, and precipitated. The samples

from Kokomo, Madison, Anderson, and Pendleton had a large mixture of local material too heavy to be carried far by the wind."

"February 28, 1895.—The specimens from Ladoga, Surprise, Lacrosse, and Irvington, Ind., are the same as the material first reported on. The samples from Topeka, Marion, and Carmel contain considerable material of local origin, such as white-lead paint, colored glass, ash, and sand; the specimen from Marion contains more organic matter than the other samples, but is of a similar nature."

"March 5, 1895.—The sample of snowdust from Peru, Ind., is of the same material as most of the other samples; it is somewhat richer in organic matter and the silt appears to be finer than most of the other samples."

"March 15, 1895.—The samples from Brownston, Corydon Co., Ind.; Iron Hill, Crittenden County, Ky.; Silver Springs, Benton County, Ark. (snowfall of February 7), are all of the same material as those previously examined. The mud formed by these samples is no more greasy or pasty than that formed by the others previously examined. The greasy feeling is due to the fineness of the particles and not to the presence of grease. These samples have about the same fertilizing value as ordinary silt containing organic matter."

"April 8, 1895.—The samples from Thorntown, Middletown, and English, Ind., are the same as those previously examined, viz, very fine silt, with organic matter of pond or marsh origin. The sample from Carmel, Ind., is made up of fine sand and shreds of decaying wood. Judging from the size of the particles, they have evidently not been carried far by the wind."

In addition to the microscopic examination Prof. Milton Whitney was requested to make a physical examination of this dust considered as an additional element in the soil, and this was particularly desired in virtue of the fact that the idea had been widely disseminated throughout the West that this fine material was especially valuable as a fertilizer.

The reports submitted by Professor Whitney, from time to time, may be summarized as follows:

February 1, 1895.—A very small sample of a black earth which is said to have been deposited upon the snow near Rockville, Ind., in such an amount and under such conditions as to be popularly known as black snow has been handed me for mechanical analysis, and I undertook the work with considerable interest. The sample delivered to me weighed but a fraction over half a gram, while we usually take at least 20 grams for a mechanical analysis. It is, therefore, quite possible that in a larger sample measurable quantities of sand might have been found, but there would have been nothing coarser than our grade of "very fine sand," with diameters ranging from 0.10 to 0.05 millimeters (0.0039 to 0.0020 inches). The mechanical analysis shows this dust material to be almost identical with the loess formation that covers very extensive areas in Illinois, Indiana, Nebraska, and other adjoining States. As a matter of interest, I send you the mechanical analysis of an "upland" loess near Virginia City, Cass Co., Ill., which is almost identical in composition with the sample from Rockville, Ind. This loess from Virginia City is in all probability a wind deposit. I send you also the mechanical analysis of a river loess from the same locality. This is quite similar to the upland loess, except that it has a larger proportion of very small sand and a smaller proportion of clay. These are typical of a large number of samples that we have examined from the State of Illinois. I send you also the mechanical analysis of the loess formation of Nebraska, notable again for its large content of silt and being almost identical in composition with the river loess from Virginia City. There is a long standing controversy as to the origin of the loess formation of the Northwest. Certain portions of the loess formation of Asia are known to be wind deposits. There is very strong presumptive evidence that much of the loess of our western States is a wind deposit. This sample from Rockville is very interesting as bearing upon this point, for there is no question but that this slight deposit has been carried by the wind.

You ask in your letter for some suggestions as to the velocity of the wind "required to keep the heavier particles up in the air for any length of time." I estimate in my work that a single particle of silt, of average size, weighs 0.000037 milligram, and that it has a surface area of 0.00283 square millimeter, and the particles may be assumed to be spherical in shape.

February 6, 1895.—I have examined the sample from Crawfordsville, Ind., sent in your letter of February 4, and believe it to be substantially the same as the sample previously examined. This larger sample may possibly contain more of the grade called "very fine sand," but the proportion of this, if any exists, is evidently very small and unimportant. The analysis previously sent you is quite reliable and identifies the material with the loess, whose origin, as I have stated in my last letter, is believed by many to be due to the wind.

March 5, 1895.—I have examined the twenty-seven samples of snow dust, mostly obtained from portions of Indiana, and believe them to be almost identical in texture to the first sample you sent, of which I made a mechanical analysis. I feel sure that these samples represent the dust which has been suspended in the air and blown from place to place, and that they have the same texture as the typical loess soils of the West, containing a large percentage (from 50 to 70 per cent) of silt, with comparatively little clay and practically no sand. It is just such material as would be expected in any moderate duststorm, and could have been carried very considerable distances.

April 15, 1895.—I have carefully examined the thirty-five additional samples of snow dust recently sent to me, and will make mechanical analyses of them at any time when it seems advisable to do so.

April 19, 1895.—The samples from Thorntown, Middletown, and English, Ind., are the same as those previously examined. The sample from Carmel, Ind., is quite different from any other examined, it is composed of heavy sand with many fibres of wood, and apparently came from some place not far away.

MECHANICAL ANALYSIS.

Percentage by weight of the contents of an air-dried sample.

Sample No.	Locality.	Moisture.	Organic matter.	Gravel, 2.0-1.0 mm.	Coarse sand, 1.0-0.5 mm.	Medium sand, 0.50-0.25 mm.	Fine sand, 0.25-0.10 mm.	Very fine sand, 0.10-0.05 mm.	Silt, 0.05-0.01 mm.	Fine silt, 0.010-0.005 mm.	Clay, 0.005-0.0001 mm.
2047	Rockville, Ind., black snow	3.17	11.98	0.00	0.00	0.00	0.00	0.00	69.37	5.80	9.68
1317	Virginia City, Ill., upland loess	......	......	0.00	0.00	0.00	0.01	7.68	61.65	9.60	15.15
1316	Virginia City, Ill., river loess......	......	......	0.00	0.00	0.01	0.10	24.84	60.98	2.80	6.15
1717	Nebraska loess formation	5.40	4.96	0.00	0.00	0.00	0.00	23.14	54.81	2.46	9.45

In addition to the preceding analyses as made by the Department of Agriculture, the following remarks have been received from various observers and specialists:

Mr. Calvin Fletcher, of Spencer, Owen Co., Ind., reports that the dust was examined by local physicians and pronounced unfit to pass into the cisterns of drinking water because of the rod-shaped bacilli. (It is difficult to believe that such bacilli had anything to do with the snow dust proper.)

W. Crane, of Covington, Ind., states that his samples burn white under the blowpipe. (Evidently the heat of the blowpipe dissipates all moisture and organic matter, leaving only sand and clay, which would agglomerate into white grains.)

Dr. G. W. Mayfield, of Bruceville, Ind., states that he finds the snow dust to be a mineral dust, finely powdered, containing but little grit and of a strong metallic taste, rather irritating to the mucous membrane. The microscope showed it to be neither coal nor wood ashes, charcoal, soot, nor clay.

Mr. James O. Parker, Danville, Ind., notes that on the day previous, viz, January 11, a severe duststorm, with a wind velocity of 40 miles per hour, prevailed in southeastern Iowa, where the ground was bare of snow. From 9 square feet of snow Mr. Parker obtained 49 grains of dust, or, approximately, 5.4 to the square foot, or, more exactly, 33.33 pounds avoirdupois to the acre.

Mr. H. P. Heller, of Brownston, Ind., after melting several pans of dusty snow, found that the resulting sample was a very greasy, black, pasty substance.

Mr. Carl A. Starck, of Silver Springs, Benton Co., Ark., sends a sample of dust collected after the blizzard of February 7–8, and reports that this dust is said to be a great fertilizer. (The analyses made by Messrs. Galloway, Woods, and Whitney suggest that this dust is no better fertilizer than any other surface soil.)

Prof. H. L. Bruner, of Irvington, Ind., states that in general a layer of snow about one-quarter of an inch deep was colored distinctly brown by the dust. It fell on a bed of snow several inches deep, and was thus protected from contamination by surface dust. A sample of this snow gave 0.37 per cent of dust by weight; carbonates seem to be almost wholly absent. The material was probably not derived from a limestone region. Several tests of the water obtained by melting the snow gave a uniformly neutral reaction with test paper. The weight of dust per square foot, as determined from two meas-

urements, is about 0.3198 grams (or 30.7 pounds avoirdupois per acre), of which about two-thirds is silica. The mineral fragments often have their angles rounded as if windworn; the largest observed had a diameter of 0.05 millimeters. According to Buchanan, the mineral particles found in deep-sea deposits, far from land, having been carried out there by the wind, seldom exceed this size. Numerous diatoms and other low plants have been found, but have not been identified. Fragments of higher plants, including many fragments of silicified cell-walls, are abundant. Among foraminifera a few genera only have been recognized as yet.

Mr. John T. Campbell, of Rockville, Ind., reports that about 5 inches of snow fell on top of the dust layer and that the dusty snow when melted seemed to form a layer of about 0.02 of an inch thick of solid or compact dust. He gathered from a small circle of 5.85 square feet the quantity of 12 grains by careful weight of dust, which is at the approximate rate of 2 grains to the square foot, or, more exactly, 12.77 pounds avoirdupois to the acre. He made a second collection of dustfall over a circle of 25 inches radius, or 13.64 square feet, which gave 35 grains, or an average of 2.5 grains to the square foot, or at the rate of 12.76 pounds avoirdupois per acre.

Dr. John L. Howard, of Louisville, Ky., has examined many specimens from places in southern Kentucky and southern Indiana, and states that the foreign substances were inorganic in character, consisting mainly of finely-divided particles of silica, with traces of mold and other matters that would be likely to be blown by high winds from country roads and fields.

Prof. C. A. Colgrove, of the Normal College, Danville, Ind., calculates the total fall to have been about 5 tons to the square mile, or at the rate of 16 pounds avoirdupois per acre.

Dr. Robert Hessler, Logansport, Ind., says: "I examined some of this snow dust shortly after it fell, and found it to consist of siliceous particles, with an admixture of vegetable matter, some of which still showed chlorophyll. Scattered throughout are a number of diatoms of different kinds."

Mr. J. B. Pence, of Crawfordsville, Ind., from an area of one square yard collected about one-half ounce of dust, which is at the rate of 150 pounds per acre.

Mr. Lafe Crosier, Laconia, Harrison Co., Ind.: The earth was covered with well packed snow to the depth of about 3 inches, on top of which was 1 or 2 inches of black, sooty snow. At 6 p. m. of the 11th the wind veered from southeast to northwest, blowing a gale all night.

Jasper, Du Bois Co., Ind.: A layer of 12 inches of snow had fallen during the day, which was covered during the night of the 10th (C) by a layer of brown or dust-colored snow.

Elva, Ky.: During the night of January 11–12, 2 inches of snow fell and was found covered with a yellowish dusty tint, having the appearance of snuff, but no smell or taste. The melted snow water was inky black.

In addition to the snowfall of January 11–12, reports of similar snow dust on other dates and in other States also frequently come to hand.

January 19.—Black snow is reported by the voluntary observer at Alpha, Ky.

February 1.—At North Lebanon, Ind.

February 8.—Logansport, Ind.

February 7–8.—Mr. Carl A. Starck, of Silver Springs, Benton Co., Ark., sends a sample of dust that fell during the blizzard, and adds: "Some say that this dust is a great fertilizer."

March 25.—W. F. Taylor, Thorntown, Ind., sends a sample of dust of that date.

The weather maps for January 10–12 show that an area of strong and cold northwest winds moved rapidly southward from the British Possessions over Dakota, Minnesota, and the Mississippi Valley. The front of this cold wave covered Minnesota, Iowa, Missouri, and Kansas at 8 a. m. of January 11. At 8 p. m. this front extended from a little east of Marquette southward over Lake Michigan, eastern Indiana, and southwestward into northern Arkansas. At 8 a. m., January 12, the cold-wave front extended southward over the western portion of Lake Erie and central Ohio, eastern Kentucky, and southwestward through eastern Tennessee into northern Louisiana. The high winds that accompany the progress of the front of the cold wave were reported at velocities varying from 28 to 48 miles per hour, and their directions were always between north and west. In the absence of any definite measurements of the velocity of the air at any considerable distance above the anemometers, it is not safe to assume that the upper layers of air moved with much greater velocity than that measured near the earth's surface. The progress of the cold-wave front, as measured in the direction from northwest to southeast, amounted to about 600 miles in twenty-four hours, or 25 miles per hour. As this front was accompanied with light snow when it first appeared in Dakota and Montana and with a slightly increasing snowfall as it moved southeastward underrunning the moister air of the Mississippi Valley and the Lake region, it is not likely that the dust torn up from the surface of the ground by an especially strong wind at any spot could be borne onward to any great distance before being brought down by the snow; moreover, the strongest winds that must have carried the dust upward lasted, at the most, but a few hours, and, therefore, the dust had abundant opportunity to settle as soon as the wind died away. It is not necessary to assume that any of the dust of which samples have been sent to the Weather Bureau for examination, had been carried 100 miles by the wind. This process of raising great clouds of dust, carrying them south and east and depositing the dust finally, either by reason of its own weight or in connection with rain and snow, is a process that must have begun in Montana on the 10th to be concluded in Ohio, Kentucky, Louisiana, and Texas on the 12th and 13th.

By platting upon a chart of Indiana the stations at which dust fell and those at which none was reported, the latter are divided into three classes 1st, Valparaiso and South Bend in the northern portion of the State, and representing an area on the south shore of Lake Michigan that was protected by the Lake from distant dust; 2d, Mount Vernon, in the extreme southeastern corner of the State, but as dustfalls were reported from neighboring counties in Kentucky it is proper to classify this with the remaining third class, which, enumerating them in the order north to south, are: Columbia City, Churubusco, Bluffton, Portland, Muncie, Cambridge City, Batesville, and Vevay. These stations are on the eastern border of those that report dust, and, of course, on the eastern border of the State. They evidently represent regions within which little or no dust fell, partly because it was swerved to one side by the wind currents, but principally because the greater part of that which had been torn up by the strong winds of the daytime had already been deposited with the light winds and the snows of the nighttime over the country lying to the westward. This process by which dust is raised and carried along during the daytime and deposited, as to its finer portions during the nighttime is one that goes on continually throughout the globe. The very finest portions of the dust are generally supposed to descend only with fog, rain, or snow, thus in London, Mr. John B. Coppick has recently called attention to the quantity of solid matter brought down by snow in its fall through the atmosphere. Thus, on January 13, 1895, four inches of snow fell in the suburbs of London, the snow crystals were regular and the snow as it lay on the ground very porous; a gallon of water melted from this snow contained 10.65 grains of solid matter, 5.75 mineral, and 4.90 carbonaceous. On January 30 a simi-

lar result was obtained, and it was also found that 75 per cent. of the impurities were brought down with the first half of the snowfall. A second analysis on January 30 of snow that fell at Somerset House, nearer the center of London, gave 17.32 grains of solid matter to the gallon, of which 6.25 were mineral and 11.07 carbonaceous or sooty matter. A large quantity of ammonia was also found in this snow water, showing its great value as a fertilizer.

Professor Stokes has shown that a particle of water, such as would surround a dust particle, and convert it into a globule of fog, will descend in still air at the rate of 40 millimeters, or about 1.6 inches per second, if it has a diameter of about 0.025 mm., or about 0.001 of an inch. Hence a particle whose diameter is 0.01 mm., corresponding to Professor Whitney's finest silt, or loess, would descend at the rate of 6.4 mm., or rather more than one-quarter of an inch per second, and a particle 0.0001 mm. in diameter, corresponding to his finest clay, would descend at the rate of 0.00064 mm. per second, or 0.1 of an inch per hour in still air.

The special interest that attaches to this present duststorm consists in its bearing on the question of the formation of our agricultural soils, and especially the so-called "loess," which is the lightest and finest of all. Large tracts of loess exist in Nebraska, Kansas, Iowa, and southward to the Gulf; in some places its depth amounts to a hundred feet or more. This light soil is easily raised and carried by the strong winds of our western plains; instances have occurred in which 6 inches of surface soil has been blown away from freshly cultivated fields in the course of a single windstorm. The dust that was caught on January 12 between two layers of snow in Indiana, probably did not differ in any material respect from that which is daily present in the atmosphere of that region, but its presence on top of the snow rendered it easy to gather the dustfall without contamination with the soil already existing. Those who wish to gather and examine the dust in the atmosphere may do so at any time by exposing a plate covered with a thin layer of glycerine in such a way that the wind may strike it. The higher this plate is above the ground, or above a valley, the smaller will be the average size of the particles. Dust of some form is always present in the atmosphere up to the tops of the highest mountains, and is a very important item in the matter of the formation of rain and in the radiation and absorption of heat. If the air had no ascending movements the very finest dust would eventually settle to the ground, although the finer particles would require weeks and months to do so; but, on account of the ascent and descent of the air, only the heavier particles fall to the ground by their weight; the finer ones are brought down from the lower atmosphere in connection with snow and rain; the finest of all undoubtedly float for many months in the very highest portions of the atmosphere, but eventually descend with fog, rain, or snow.

It might be thought that as the surface winds carry the lighter soils to greater distances in proportion to the fineness of the particles, therefore the finest particles would be found preponderating in the surface soil at great distances from those regions in Colorado, Wyoming, Nebraska, and Dakota, where the strong winds first begin to raise the clouds of dust. But Prof. Milton Whitney states that it has not as yet been demonstrated that the texture of the loess soils becomes finer and finer as we proceed from north to south, and the reason for this undoubtedly is that the regular geographical distribution of the coarse and fine particles, as first deposited by a strong wind, is altered by the action of the next strong wind that blows, so that there is an approximate uniformity throughout the watershed of the Mississippi and Missouri, due to the general action of all strong winds for many centuries. As the finer particles fall in great quantities upon the ocean they form an important item in the flocculent sediments that form at its bottom.

As this dust, or loess, formation, when it has once settled upon the ordinary soils becomes a new ingredient in their composition, those interested in this subject should study the mechanical analysis of soils and their relation to moisture as set forth by Prof. Milton Whitney in Bulletin No. 4 of the Weather Bureau.

METEOROLOGICAL TABLES.

[*Prepared by the Division of Records and Meteorological Data.*]

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only the 8 p. m. observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation.

The stations are arranged in geographical or climatological divisions, for each of which the mean temperature and average precipitation for the month are also given, together with their departures from normal values.

Generally the headings of the several columns are sufficiently explicit as to the data underneath.

The mean pressure is based on simultaneous observations taken at 8 a. m. and 8 p. m., seventy-fifth meridian (Eastern) time, which time is always understood unless otherwise expressed. Mean values thus computed differ from the mean of the 24 hourly readings by amounts varying from zero to 0.02 of an inch; the departures east of the ninetieth meridian are generally above the mean of 24 hourly readings and those west of that meridian are generally below. A comparison for each individual station can readily be made in connection with the data given in Table V.

The pressures have been reduced to sea level by the empirical method published by Prof. H. A. Hazen in Signal Service Professional Paper No. VI, which, however, has been further modified for a few high-level stations.

The mean temperature of the dew-point and the mean relative humidity are based on daily observations of the whirled psychrometer at 8 a. m. and 8 p. m. The psychrometric tables of Ferrel, as modified by Russell, are used (see Instructions to Weather Bureau Voluntary Observers, 1892), omitting the correction for atmospheric pressure.

The maximum wind velocities given in the table are the velocities as read from the sheets of the anemometer register for any 5-minute period in the twenty-four hours, midnight to midnight. The indications of the Weather Bureau Robinson anemometer can be approximately reduced to true velocities by means of Marvin's tables.

The number of clear and cloudy days and the average cloudiness are based upon numerous personal estimates by the observer during the daytime and do not relate to the nighttime. When these personal estimates give from 0 to 3 cloudiness, on a scale of zero to ten (0–10), the day is classed as clear; 4 to 7, partly cloudy; and 8 to 10, cloudy.

Table II gives, for about 2,400 stations occupied by voluntary observers, the extreme maximum and minimum temperatures, the mean temperature deduced from the average of

all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (....).

For the sake of uniformity the monthly mean temperature has been deduced from readings of self-registering maximum and minimum thermometers whenever practicable. Formerly the means obtained by the use of observations at 7 a. m., 2 and 9 p. m. were printed in this table, whenever given, in preference to those deduced from the daily extremes.

These stations are arranged alphabetically by States, and their reports are generally received through the cooperation of the respective State Weather Services. The voluntary stations in the Republic of Mexico and those in the West Indies are included in this list for convenience of tabulation.

Table III gives, for about 30 Canadian stations, the mean pressure, mean temperature, total precipitation, prevailing wind, and the respective departures from normal values. Reports from Newfoundland and Bermuda are included in this table for convenience of tabulation.

The mean pressures and temperatures here given are based upon observations made simultaneously for telegraphic purposes at 8 a. m. and 8 p. m.; the pressures have been reduced to sea level by the Weather Bureau method and, therefore, differ slightly from those reduced by the method employed by the Canadian Meteorological Service.

Table IV gives, for 82 stations, the mean hourly temperatures deduced from thermographs of the well-known pattern manufactured by Richard Bros., Paris, described and figured in the Report of the Chief of the Weather Bureau, 1891-'92, p. 29. These instruments are placed in the standard shelter with other thermometers, and are checked twice daily, for time errors and for agreement with the standard whirled thermometer.

In transcribing the hourly values, the readings of the dry-bulb thermometer of the whirled psychrometer at 8 a. m. and 8 p. m. are adopted as the standard of reference, and these standard readings are given in the appropriate columns of Table IV. Corrections for intermediate hours, interpolated from the known differences at 8 a. m. and 8 p. m. and at other hours when special check observations are made, are applied to the curve throughout the twenty-four hours, thus making it conform as closely as practicable to the indications of the standard mercurial thermometer. The averages given in this table are, therefore, those of the standard dry thermometer at 8 a. m. and 8 p. m., and the corrected thermograph readings for intermediate hours.

In general, the magnitude of the corrections applied is about 1° Fahrenheit, although a number of instruments accord with the standard dry thermometer within less than a degree.

As has been noted elsewhere, the greatest differences are those between the daily extremes registered by thermographs and by standard self-registering maximum and minimum thermometers, respectively.

Table V gives, for 67 stations, the mean hourly pressures as automatically registered by barographs of the pattern manufactured by Richard Bros., Paris, except for Washington, D. C., where Foreman's barograph is in use. Both instruments are described in the Report of the Chief of the Weather Bureau, 1891-'92, pp. 26 and 30.

The readings of the mercurial barometer at 8 a. m. and 8 p. m., corrected for temperature and instrumental error, are used as a means of checking and correcting the barograph curve, in the same manner as described in the table of temperature means, and are those given in this table

The corrections applied to the individual hourly barograph readings vary in magnitude. The average is about 0.02 of an inch, while in extreme cases it may be 0.06 or 0.08 of an inch, depending somewhat on the individual skill of the observer in keeping the instrument in adjustment and at uniform temperature.

The means have not been reduced to sea level, neither has a correction been applied to the mercurial barometer readings at 8 a. m. and 8 p. m. to reduce to standard gravity.

Although the mean pressures are given in this table to the nearest thousandth of an inch, yet it is probable that these figures still need appreciable systematic corrections, therefore, as in the case of so many similar European series, caution should be exercised in using them for the investigation of diurnal periodicities of pressure. The adopted process of reduction to the standard mercurial barometer prevents the accumulation of any progressive error, whether due to the time scale or to the vacuum box, but does not inform us of any periodic errors that may have occurred within the 12-hour periods. On this latter point we have only the little knowledge that is given to us by a general investigation into the effect of temperature on these aneroids; Professor Marvin's experiments have shown that, although the manufacturer has attempted a compensation for temperature (presumably by introducing some air into the vacuum box), yet this result has not always been perfectly satisfactory. Several aneroids have been found to show higher pressures when the instrumental temperature rises, while others do the reverse. In a number of cases a rise of 10° F., in the instrumental temperature produces a fall of 0.010 or 0.015 of an inch in the recorded pressure.

In general, it is safe to assume that any one of the Richard barographs at Weather Bureau stations is liable to a temperature correction of this amount, although the average of several instruments would undoubtedly be much smaller. Since the highest temperature, and, therefore, the largest plus or minus correction for temperature, generally occurs some time after the 8 a. m. reading, and *vice versa*, the lowest temperature with the largest minus or plus correction occurs before the 8 a. m. reading, therefore, there is introduced into every daily barograph record an error that will be either positive between 8 p. m. and 8 a. m., and negative between 8 a. m. and 8 p. m., or *vice versa*. The average amount of the maximum value of this error for a month, varying as it does with the temperature of the room in which the aneroid is kept, may easily amount in the winter season to 0.02 of an inch, but when station barometers are located in large buildings of uniform temperature the average will be less. It is evident, therefore, that these hourly means can not be used for determining by the harmonic analysis the shorter and smaller periodicities, although they sometimes give the semi-amplitude of the principal simple daily component to within 0.01 of an inch, or less. To this extent, therefore, these may be cautiously used in the study of both the geographical and chronological distribution of this first component, a study whose importance undoubtedly warrants the preparation and publication of this table from month to month.

Table VI gives, for 136 stations, the arithmetical means of the hourly movements of the wind ending with the respective hours, as registered automatically by the Robinson anemometer, in conjunction with an electrical recording mechanism, described and illustrated in the Report of the Chief of the Weather Bureau, 1891-'92, p. 19. No corrections have been applied to reduce the registered velocities to true velocities.

In studying the diurnal variations of wind movement, the following facts should be kept in mind. In graduating the dials of the various sizes of Robinson anemometers, it is assumed that the centers of the cups move only one-third as fast as the wind, although numerous experiments have demonstrated that cups and arms of various proportions require different formulæ and tables of reduction even in perfectly steady motion. Professor Marvin has further shown that for ordinary gusty winds, when the anemometer cups rapidly vary their rate of rotation, the moment of inertia of the revolving parts is a most important factor. The instruments having the least inertia record most truly, and those having larger inertia exceed these in proportion as the gusts are stronger, consequently, the anemometer records are liable to be too large in the gusty winds of the daytime as compared with the more steady winds of nighttime. No correction for this inertia error has been determined, nor can be, unless we have simultaneous records with two anemometers having different moments of inertia; therefore, the apparent diurnal variations of wind velocity include a slight inertia error which is probably periodic in character, having its maximum in the daytime and its minimum at night.

While we must regard the gustiness of the ordinary wind, that is, its sudden and momentary fluctuations of velocity, as highly variable, yet in practical anemometry we can not do more than make an average allowance for its effects upon the apparatus.

For the ordinary gusty winds of the free atmosphere Professor Marvin adopts the following equation expressing the relation between the motion of the cups and the velocity of the wind at any moment:

$$\text{Log. } V = 0.509 + 0.9012 \log. v;$$

where V is velocity of wind in miles per hour and v is the linear velocity (also in miles per hour) of the cup centers. This equation applies strictly to anemometers that have 4-inch hemispherical brass cups on arms 6.72 inches long, whose revolving parts weigh about 590 grams (22 ounces) and have a moment of inertia of about 50,000 C. G. S. units.

This equation has been deduced from comparative observations in the open air of anemometers whose behavior in steady velocities on the whirling machine had been previously studied. The recognition thus given to the important effects of inertia enables us to say that by applying this formula, or the following equivalent table, we partly annul the influence of the inertia of the brass anemometers used by the Weather Bureau.

The following table gives the corrected velocities corresponding to observed velocities up to 90 miles per hour. The tabular values corresponding to indicated velocities greater than 60 miles per hour are uncertain, as direct experiments were not made at velocities above this limit:

Wind velocities, as indicated by Weather Bureau anemometer, converted to true velocities (in miles per hour).

Indicated velocity.	0	1	2	3	4	5	6	7	8	9
0	......	......	......	......	......	5.1	6.0	6.9	7.8	8.7
10	9.6	10.4	11.3	12.1	12.9	13.8	14.6	15.4	16.3	17.0
20	17.8	18.6	19.4	20.2	21.0	21.8	22.6	23.4	24.2	24.9
30	25.7	26.5	27.3	28.0	28.8	29.6	30.3	31.1	31.8	32.6
40	33.3	34.1	34.8	35.6	36.3	37.1	37.8	38.5	39.3	40.0
50	40.8	41.5	42.2	43.0	43.7	44.4	45.1	45.9	46.6	47.3
60	48.0	48.7	49.4	50.2	50.9	51.6	52.3	53.0	53.8	54.5
70	55.2	55.9	56.6	57.3	58.0	58.7	59.4	60.1	60.8	61.5
80	62.2	62.9	63.6	64.3	65.0	65.8	66.4	67.1	67.8	68.5
90	69.2	......	......	......	......	......	......	......	......	......

Table VII gives the danger points, the highest, lowest, and mean stages of water in the rivers at cities and towns on the principal rivers; also the distance of the station from the river mouth along the river channel.

Table VIII gives the maximum, minimum, and mean readings of the wet-bulb thermometer for 135 stations, as determined by observations of the whirled psychrometer at 8 a. m. and 8 p. m., daily.

The difference between mean local time and seventy-fifth meridian time is also given in the table.

Table IX gives, for 140 stations, or all that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions based on these two observations only and without considering the velocity of the wind. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I. By adding the four components for the stations comprised in any geographical division one may obtain the average resultant direction for that division.

Table X gives the total number of stations in each State from which meteorological reports have been received, and the number of such stations reporting thunderstorms (T) and auroras (A) on each day of the current month. From the nature of the phenomena, thunderstorms are more likely to be reported than auroras. It is not possible at present to give an accurate statement of the number of observers who habitually look for auroras, or of those that make complete returns of thunderstorms, but it may be approximately assumed to be about as given in the Annual Summary of the WEATHER REVIEW for 1894.

Table XI gives, for 42 stations, the percentages of hourly sunshine as derived from the automatic records made by two essentially different types of instruments, designated, respectively, the thermometric recorder and the photographic recorder. The kind of instrument used at each station is indicated in the table by the letter T or P in the column following the name of the station.

The thermometric recorder operates on the principle of a Leslie differential air thermometer, one of the bulbs being blackened. It is fully described in the "American Meteorological Journal," Vol. IX, pp. 345–349. The record is produced electrically whenever the intensity of the sunshine surpasses a certain minimum limit and is sufficient to cause a mercurial column to cover two platinum wires fused into the connecting stem of the two bulbs. The instrument is adjusted by trial and observation so that a record will just be made when the cloudiness is not sufficient to quite obscure the disk of the sun. Denser cloudiness than this, so that the exact form of the sun's disk can not be seen with the unaided eye, will cause an interruption of the record.

The photographic recorder operates on the principle of Jordan's recorder. The record sheets for this instrument are sensitized each month with the ordinary blue-print solution, and are generally used only for a period of fifteen days, a new sheet being then introduced, but the instrument can be used for a whole month's record without changing the sheets.

Neither of these instruments will record satisfactorily the duration of the sunshine for about one hour after sunrise and one hour before sunset (at latitudes 30° to 50°) and, on this account, it has been considered necessary to apply to the recorded hours of sunshine what has been designated a "twilight" correction. The amount of this correction is found from a table of the time of sunrise and sunset, noting, in connection therewith, the time of beginning and ending of sunshine on the automatic record. This correction is applied when we know, by personal observation, the comparative clearness of the sky at the time of sunrise and sunset, as the case may be.

Although the action of the thermometric recorder is based

on the heating effect of the sun's rays, while that of the photographic recorder is based on the actinic effect, it is found there is not a very great difference between the two instruments. In general, however, the photographic recorder does not give such good results at stations where rain is more or less frequent and having comparatively high relative humidities, since under these conditions the sensitized paper deteriorates.

The photographic recorders, and the tables compiled therefrom, are made on true or apparent solar time, while the thermometric instruments are adjusted to record on standard (Eastern) time, but the tables from the latter are compiled on local mean solar time. The last column gives the percentage of sunshine deduced by taking the complement of the local observer's estimate of cloudiness, which latter is published in Table I.

Table XII gives the records of hourly precipitation as reported by stations equipped with automatic gauges, of which 37 are known as float gauges and 7 as weighing rain and snow gauges.

In northern latitudes the records are more or less incomplete during winter months because the float gauge does not register snowfall and the record of the weighing gauge is occasionally interrupted by high winds.

The totals found in the table (XII) are sometimes slightly in excess of the sums of the hourly amounts for the twenty-four hours, and the totals for the month do not always agree with those given in Table I. The reason for this is as follows: The float gauge is so constructed that the small rainfalls aggregating less than five-hundredths (0.05) of an inch are not automatically registered on the register sheets; whenever, therefore, a fall not exceeding that amount occurs in the nighttime it is not possible to accredit it to the proper hour or hours, and the totals given are consequently deficient by the sum total of these small amounts throughout the month.

On account of slightly different exposures the self-registering gauges may differ slightly in the total catch for the month from the records of the standard gauges as measured with graduated stick by the observer in person at 8 a. m. and 8 p. m.

As the object of this table is to deduce diurnal periods, therefore fragments of days are rejected unless a close interpolation is possible.

Table XIII gives the record of excessive precipitation at all stations from which reports are received.

Table XIV gives a record of the heaviest rainfalls for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering rain gauges. About 37 stations are furnished with the self-registering float rain gauge and 7 with the self-registering, weighing, rain and snow gauge. The float gauge does not record snowfall, and the frequent interruptions of both the self-registers, due to snow and ice, explain the numerous cases of incomplete record.

TABLE I.—*Climatological data for Weather Bureau Stations, January, 1895.*

Stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure in inches.			Temperature of the air, in degrees Fahrenheit.										Humidity and precipitation.					Wind.						Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a.m. and 8 p.m. ÷ 2.	Mean reduced.	Departure from normal.	Mean max. and min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity: Miles per hour.	Maximum velocity: Direction.	Maximum velocity: Date.					Absolute maximum.	Year.	Absolute minimum.	Year.
New England.						27.6	+1.0										3.86	-0.3														
Eastport	76	22	29.89	29.99	-.01	24.4	+4.1	47	11	30	-4	5	19	43	17	72	2.70	-1.4	15	9,136	w.	66	se.	26	7	12	12	6.4	54	1892	-20	1874
Portland, Me	103	24	29.88	29.99	-.06	22.0	+1.9	42	22	29	-4	5	14	29	17	83	2.47	-1.1	10	5,021	w.	34	e.	26	12	7	12	5.5	62	1890	-15	1887
Northfield	872	8	29.02	30.03	-.04	15.8	+1.0	39	13	25	-15	1	6	38	9	76	1.99	-1.9	11	6,032	sw.	40	s.	13	9	13	9	5.5	61	1890	-26	1893
Boston	125	25	29.89	30.03	-.04	28.8	+3.4	54	7	36	4	5	22	28	20	72	3.79	-0.4	18	8,270	w.	40	e.	26	11	8	12	6.0	70	1876	-13	1882
Nantucket	14	9	30.02	30.03	-.06	31.4	+0.7	53	11	36	10	5	26	29	26	80	3.91	0.0	17	8,956	n.	46	sw.	26	10	6	15	6.3	56	1890	-4	1888
Woods Holl	......	18	......	......	......	30.5	-0.8	52	11	35	9	5	26	34	......	......	4.00	+0.5	15	12,005	w.	54	sw.	26	10	8	13	5.9	58	1892	-8	1882
Vineyard Haven	......	9	......	......	......	33.7	-1.3	55	8	40	11	5	27	25	......	......	4.19	+0.7	16	......	nw.	......	......	...	11	5	15	....	62	1890	-7	1888
Block Island	27	15	30.02	30.05	-.04	31.4	+0.2	53	26	37	10	5	26	29	25	75	4.12	-0.3	16	13,132	nw.	56	se.	26	7	16	8	5.8	59	1885	-4	1882
Narragansett Pier	......	13	......	......	......	30.6	+3.5	55	7	40	8	5	21	37	......	......	4.67	-1.1	15	......	nw.	......	......	...	12	5	14	....	63	1890	-5	1888
New Haven	107	23	29.98	30.05	-.07	26.6	-0.4	48	7	33	5	5	20	25	19	74	5.13	+0.9	15	6,882	w.	38	w.	27	11	10	10	5.0	65	1890	-14	1873
New London	45	24	30.02	30.07	-.08	28.6	-0.9	54	7	35	7	5	22	28	24	82	5.54	+1.2	14	5,714	nw.	41	se.	26	8	13	10	5.5	65	1880	-10	1882
Mid. Atlan. States.						31.4	-1.8										4.68	+1.0														
Albany	85	22	29.96	30.06	-.04	22.6	-1.6	47	11	30	-4	5	15	33	18	83	1.65	-1.2	12	5,358	s.	38	se.	13	7	9	15	6.5	62	1889	-18	1878
New York	185	25	29.86	30.07	-.05	30.1	-0.8	55	11	37	10	14	23	34	23	77	5.62	+1.7	14	7,858	w.	36	w.	27	7	10	14	6.2	67	1890	-6	1875
Harrisburg	377	7	29.66	30.09	-.03	25.4	-4.9	44	7	31	2	*	20	25	22	87	3.80	+0.1	15	5,568	w.	36	e.	26	6	12	13	6.3	67	1890	-4	1893
Philadelphia	117	25	29.95	30.08	-.08	30.6	-1.5	55	7	37	10	*	24	26	23	76	4.52	+1.2	13	8,161	nw.	32	nw.	27	8	11	12	6.2	72	1890	-5	1875
New Brunswick	......	9	......	......	......	28.4	-2.0	52	7	36	8	5	21	34	......	......	5.20	+1.5	14	......	w.	......	......	...	2	17	12	....	62	1892	-10	1893
Baltimore	179	25	29.87	30.08	-.08	31.3	-3.0	60	7	37	9	13	25	22	23	74	4.67	+1.5	16	6,030	w.	36	w.	27	8	15	8	5.6	73	1890	-6	1881
Washington	112	25	29.96	30.09	-.09	31.6	-1.0	62	7	39	4	13	25	23	24	77	4.42	+1.1	13	5,021	s.	28	nw.	19	7	8	16	6.4	76	1890	-14	1881
Cape Henry	......	22	......	......	......	39.2	-0.5	70	7	46	17	13	32	29	......	......	5.32	+0.7	11	......	sw.	......	......	...	5	10	16	....	78	1876	6	1893
Lynchburg	685	24	29.33	30.10	-.07	34.6	-2.3	62	7	42	-3	13	27	27	25	74	7.27	+3.1	16	3,306	sw.	27	nw.	19	7	14	10	6.3	77	1890	-6	1893
Norfolk	57	25	30.03	30.10	-.06	40.3	-0.2	70	7	48	15	13	33	31	32	76	4.30	+0.4	11	7,508	w.	40	sw.	26	13	11	7	4.5	80	1871	6	1893
S. Atlantic States.						45.9	-1.1										6.11	+1.9														
Charlotte	773	17	29.24	30.10	-.08	39.0	-2.2	66	8	46	3	13	32	26	32	81	5.84	+0.5	17	5,731	sw.	36	sw.	12	5	10	16	6.8	77	1890	-1	1886
Hatteras †	11	15	30.10	30.11	-.05	45.8	+0.2	68	10	52	26	14	40	28	40	81	6.14	-0.1	14	11,325	n.	48	n.	1	7	10	14	6.2	73	1890	14	1886
Kittyhawk	9	20	30.06	30.07	-.10	42.6	+0.4	67	7	49	22	1	36	24	35	77	5.94	+0.6	13	11,685	ne.	56	se.	26	12	7	12	5.2	73	1876	9	1884
Raleigh	388	9	29.68	30.12	-.06	39.4	-2.1	69	7	48	6	13	31	30	30	75	7.44	+3.9	13	5,147	sw.	30	sw.	26	5	12	14	6.4	76	1890	2	1893
Wilmington	78	25	30.08	30.12	-.05	46.1	-1.2	74	7	54	20	1	38	34	37	78	4.80	+0.9	14	6,762	ne.	42	sw.	26	11	9	11	5.3	80	1890	9	1884
Charleston	52	25	30.08	30.13	-.05	49.0	-0.9	72	7	56	22	13	42	21	40	80	7.68	+3.6	12	5,789	n.	32	s.	26	5	15	11	6.0	80	1879	10	1886
Columbia	......	8	......	......	......	45.2	-1.2	73	7	53	10	13	37	28	......	......	7.27	+3.4	13	......	sw.	......	......	...	6	11	14	....	78	1890	10	1895
Augusta	180	24	29.91	30.12	-.08	45.4	-2.0	73	7	54	11	13	37	31	35	72	6.35	+1.9	12	3,807	sw.	26	nw.	12	7	9	15	6.3	80	1890	6	1886
Savannah	98	25	30.02	30.13	-.07	50.4	-1.2	74	8	59	23	13	42	30	41	80	5.02	+1.5	11	6,042	w.	32	n.	12	7	15	9	5.9	80	1879	12	1886
Jacksonville	43	24	30.07	30.12	-.06	56.1	+0.8	79	30	66	26	1	46	35	46	78	4.63	+1.2	12	5,396	ne.	31	sw.	12	10	7	14	6.1	81	1888	15	1886
Florida Peninsula.						64.0	-0.4										2.72	-0.2														
Jupiter	28	8	30.09	30.12	-.04	65.4	-1.6	83	29	73	40	1	58	25	58	83	3.33	-0.8	9	6,817	s.	36	se.	10	16	12	3	3.8	83	1895	34	1892
Key West	22	25	30.11	30.13	-.01	69.0	-1.4	79	29	73	53	1	65	14	62	82	3.26	+1.2	6	6,065	ne.	31	nw.	10	18	9	4	3.5	90	1877	41	1886
Tampa	36	15	30.09	30.13	-.05	60.8	+1.7	79	8	70	31	1	52	29	54	86	3.40	+0.9	9	4,849	n.	24	s.	25	7	17	7	5.3	82	1891	16	1886
Titusville	44	8	30.10	30.14	-.05	61.0	-0.1	83	29	70	33	1	52	27	53	85	0.88	-2.3	6	8,137	sw.	36	nw.	27	17	13	1	3.1	83	1895	29	1893
East Gulf States.						48.4	-1.5										5.70	-0.4														
Atlanta	1,131	17	28.88	30.12	-.09	40.4	-2.1	66	19	48	5	13	33	27	33	78	5.47	-0.8	14	8,071	nw.	39	e.	25	10	6	15	6.1	75	1890	-2	1886
Pensacola	56	16	30.05	30.11	-.08	50.5	-2.4	72	16	58	22	13	43	29	43	80	3.12	-1.8	10	7,215	ne.	36	sw.	25	9	6	16	6.0	79	1890	15	1886
Mobile	57	25	30.06	30.12	-.07	48.6	-2.3	72	16	56	21	13	41	28	42	86	5.24	+0.3	16	6,603	n.	35	s.	25	9	12	10	5.9	78	1882	11	1886
Montgomery	257	23	29.83	30.12	-.08	46.9	-1.3	73	7	55	15	13	38	29	38	79	6.69	+1.7	15	5,069	w.	28	n.	16	3	11	17	7.2	78	1890	5	1886
Meridian	358	6	29.70	30.10	-.08	44.4	-2.7	74	19	52	16	13	36	31	37	81	7.42	+2.1	11	5,160	nw.	26	sw.	15	6	9	16	6.7	79	1890	14	1893
Vicksburg	254	25	29.81	30.08	-.11	46.2	+0.9	76	6	54	19	13	39	29	39	78	6.56	+1.1	15	6,282	se.	35	w.	25	8	10	13	6.3	82	1890	3	1886
New Orleans	54	25	30.08	30.09	-.07	52.0	-1.8	77	19	60	27	13	44	32	44	80	7.19	+1.8	14	7,150	n.	32	n.	8	10	7	14	5.9	82	1890	15	1886
Port Eads	......	9	......	......	......	58.0	-1.3	72	*	64	35	10	52	23	......	......	3.89	-0.9	7	......	......	......	......	...	...	...	...	....	......	......	......	......
West Gulf States.						46.6	+0.4										2.40	-1.3														
Shreveport	249	24	29.80	30.08	-.11	44.4	+0.4	77	6	52	18	13	37	35	36	75	2.26	-2.7	11	5,986	se.	34	nw.	25	6	5	20	7.3	78	1890	1	1886
Fort Smith	492	13	29.58	30.13	-.05	38.8	-2.6	73	20	43	5	12	25	36	27	78	2.24	-0.1	7	5,697	e.	42	w.	25	4	10	17	6.9	80	1890	-7	1894
Little Rock	302	16	29.77	30.10	-.10	37.2	-3.1	73	6	45	12	31	30	30	27	71	7.12	+2.1	11	6,035	nw.	37	nw.	12	7	5	19	7.1	78	1880	-5	1886
Corpus Christi	20	8	30.08	30.05	-.12	57.8	+3.8	78	15	65	32	9	50	32	52	87	0.31	-3.6	6	8,694	n.	36	nw.	7	5	6	20	6.9	82	1892	16	1886
Galveston	42	25	30.05	30.09	-.07	53.4	+1.1	71	20	59	31	9	48	21	46	81	1.24	-2.7	8	9,818	s.	49	nw.	28	12	10	9	4.9	75	1882	11	1886
Palestine	510	13	29.53	30.10	-.10	46.0	+0.8	78	19	55	18	13	37	38	36	74	2.42	-2.0	10	5,340	s.	27	nw.	28	5	13	13	6.7	79	1894	0	1886
San Antonio	679	16	29.36	30.09	-.08	54.2	+2.7	79	*	64	25	9	44	42	36	56	1.24	-0.3	6	4,944	n.	36	n.	7	6	17	8	5.3	81	1886	6	1886
Ohio Val. & Tenn.						30.4	-3.2										5.31	+0.8														
Chattanooga	762	17	29.29	30.13	-.06	37.9	-3.3	65	18	45	5	13	31	33	30	75	6.58	-0.5	15	6,106	w.	41	w.	12	5	8	18	7.1	75	1890	-7	1886
Knoxville	980	25	29.03	30.12	-.08	35.2	-2.9	59	21	42	-3	13	28	28	27	76	6.72	+0.9	17	4,718	ne.	36	sw.	26	10	5	16	6.4	74	1876	-16	1884
Memphis	330	24	29.76	30.13	-.06	37.8	+0.4	72	6	45	7	12	30	26	29	74	5.94	+0.1	11	6,305	nw.	38	nw.	25	11	4	16	6.0	79	1890	-8	1886
Nashville	545	25	29.49	30.10	-.07	34.6	-2.3	64	18	41	-3	12	28	28	28	78	5.71	+0.4	13	6,138	n.	36	se.	25	4	11	16	7.0	75	1890	-10	1884
Lexington †	989	12	28.97	30.08	-.05	27.7	-3.3	61	21	35	-12	12	20	32	20	70	5.60	+1.1	16	11,180	s.	60	sw.	26	3	8	20	7.8	71	1890	-12	1895
Louisville	525	24	29.49	30.09	-.09	29.2	-3.4	62	6	36	-10	12	22	28	22	74	4.54	+0.3	16	7,486	sw.	39	sw.	26	9	6	16	6.7	72	1890	-20	1884
Indianapolis	766	24	29.20	30.08	-.08	22.9	-4.1	58	21	30	-13	12	16	28	17	77	3.12	-0.1	14	5,742	sw.	30	sw.	26	8	6	17	6.5	70	1890	-25	1884
Cincinnati	628	25	29.38	30.10	-.07	26.6	-5.6	60	21	34	-10	12	20	30	21	78	6.13	+2.6	15	6,648	sw.	36	w.	21	10	7	14	6.2	71	1890	-12	1886
Columbus	824	17	29.16	30.09	-.06	24.1	-3.9	56	21	31	-8	12	17	27	19	80	4.67	+1.2	18	6,259	sw.	32	e.	25	2	13	16	7.2	67	1890	-20	1884
Pittsburg	842	24	29.12	30.07	-.08	27.0	-2.8	58	21	35	-5	13	20	42	24	87	4.16	+0.9	21	6,171	w.	28	w.	26	7	9	15	6.8	75	1874	-12	*
Parkersburg	638	7	29.38	30.10	-.05	28.6	-4.2	50	*	37	-6	13	21	44	25	87	5.50	+2.4	20	5,226	w.	27	w.	26	6	8	17	6.8	70	1890	-11	1893
Lower Lake Region.						22.0	-2.7										2.92	+0.2														
Buffalo	690	25	29.21	30.00	-.09	22.9	-0.7	49	21	28	4	5	18	24	18	80	4.48	+1.6	21	12,022	w.	64	w.	26	0	12	19	8.0	66	1874	-14	1884
Oswego	335	25	29.60	29.99	-.10	21.6	-1.3	43	11	28	-5	5	15	33	18	82	2.64	-0.4	19	10,704	sw.	40	sw.	27	4	8	19	7.9	64	1890	-23	1885
Rochester	523	25	29.40	29.99	-.10	23.0	-0.4	48	7	29	5	*	16	27	18	78	3.12	-0.1	20	7,849	sw.	38	sw.	27	3	12	16	7.2	69	1874	-12	1873
Erie	714	22	29.20	30.01	-.09	24.0	-2.3	55	21	32	-5	13	16	27	18	80	3.51	0.0	18	9,943	sw.	40	se.	26	2	10	19	7.6	73	1876	-15	1875
Cleveland	740	25	29.19	30.06	-.08	22.4	-3.1	56	21	30	-5	13	15	40	19	86	2.32	-0.3	17	11,060	sw.	52	sw.	13	3	9	19	7.4	70	1874	-17	1873
Sandusky	629	18	29.31	30.04	-.08	22.0	-3.7	57	21	29	-5	12	16	28	17	82	2.39	+0.1	14	7,636	w.	40	nw.	3	0	5	26	8.8	69	1890	-16	1879
Toledo	674	25	29.26	30.06	-.08	19.8	-5.3	53	21	26	-6	12	14	27	17	89	2.16	-0.1	18	8,879	w.	43	sw.	26	5	8	18	7.3	71	1890	-14	*
Detroit	724	25	29.18	30.01	-.09	20.0	-5.1	49	21	26	-4	28	14	33	15	82	2.76	+0.7	15	9,550	sw.	48	sw.	21	9	6	16	6.3	66	1890	-15	*
Upper Lake Region.						15.2	-1.9										2.68	+0.6														
Alpena	600	23	29.24	29.94	-.12	17.4	+1.2	41	21	24	-2	28	11	26	12	80	2.72	+0.1	19	8,379	w.	40	nw.	22	5	10	16	6.7	52	1876	-27	1882
Grand Haven	628	24	29.25	29.98	-.09	19.8	-3.8	50	21	26	-2	12	13	29	17	91	3.77	+1.4	25	9,417	nw.	50	sw.	21	4	3	24	8.4	61	1890	-12	1873
Marquette	734	24	29.10	29.95	-.10	14.5	+0.2	33	*	20	-10	28	9	26	10	85	5.14	+3.5	21	8,960	nw.	33	nw.	22	5	8	18	7.3	56	1890	-26	1881
Port Huron	639	21	29.26	30.00	-.10	19.6	-1.5	46	21	26	-8	28	13	21	14	79	2.69	+0.6	15	9,841	sw.	53	sw.	21	7	5	19	6.9	64	1890	-15	*
Sault Ste. Marie	642	7	29.16	29.92	-.10	12.6	-1.9	38	2	19	-12	31	6	30	10	90	3.17	+1.4	22	6,048	se.	35	nw.	22	0	6	25	8.4	42	1892	-26	1893
Chicago	824	25	29.10	30.04	-.07	17.4	-6.7	51	21	24	-9	27	10	36	13	81	2.15	0.0	14	13,444	nw.	64	sw.	21	12	6	13	5.8	65	1876	-20	1875
Milwaukee	673	25	29.25	30.03	-.07	15.1	-3.5	45	21	22	-12	28	8	27	9	74	1.78	-0.4	14	8,980	w.	50	sw.	21	11	10	10	5.5	59	1874	-25	1875
Green Bay	617	9	29.30	30.03	-.08	13.4	-0.1	37	21	21	-15	28	6	23	6	72	1.96	-0.9	11	7,258	s.	41	n.	12	12	5	14	6.0	45	1894	-36	1888
Duluth	702	25	29.22	30.05	-.06	7.8	-0.8	32	21	15	-20	30	0	29	3	82	0.75	-0.4	14	5,845	sw.	36	nw.	21	13	8	10	4.9	51	1894	-41	1885
North Dakota.						-2.6	-2.4										0.63	0.0														
Moorhead	995	15	29.01	30.14	-.03	-2.0	-0.5	25	19	6	-29	27	-10	35	-6	84	0.33	-0.4	9	7,555	nw.	36	se.	4	11	13	7	4.8	46	1889	-48	1887
St. Vincent	804	15	29.16	30.14	-.04	-6.2	-1.8	28	19	3	-32	30	-16	35	-10	88	0.77	+0.1	10	6,954	n.	32	s.	8	15	7	9	4.2	48	1889	-54	1888
Bismarck	1,681	21	28.19	30.17	-.02	-1.3	-4.6	38	14	8	-32	23	-11	36	-8	76	0.89	+0.3	12	6,626	nw.	31	nw.	7	9	10	12	6.0	50	1891	-44	1887
Williston	1,875	17	27.96	30.15	-.02	-1.0	-2.6	30	14	8	-36	23	-10	37	-8	74	0.53	0.0	13	6,943	nw.	42	w.	14	8	17	6	5.5	50	1891	-49	1888
Upper Miss. Valley.						16.7	-2.9										1.51	-0.3														
Minneapolis	......	6	......	......	......	6.8	-5.1	33	21	15	-20	27	-1	31	......	......	0.88	+0.1	8	......	nw.	....	......	...	13	3	15	....	49	1891	-26	1893
St. Paul	850	25	29.11	30.12	-.03	6.0	-4.0	34	21	14	-22	27	-2	28	0	75	1.05	+0.1	11	6,087	nw.	36	w.	11	12	6	13	5.1	49	1879	-41	1888
La Crosse	730	23	29.25	30.10	-.03	10.7	-2.8	41	20	20	-17	28	2	29	6	84	1.22	-0.1	11	5,600	s.	30	nw.	21	11	11	9	5.4	59	1874	-43	1873
Davenport	613	24	29.37	30.08	-.07	15.4	-3.7	54	20	24	-13	27	6	32	9	78	1.27	-0.4	12	7,699	sw.	54	sw.	21	7	12	12	5.6	62	1894	-27	1884
Des Moines	860	17	29.13	30.13	-.05	16.7	0.0	64	20	26	-14	30	7	30	9	72	1.30	-0.1	7	6,359	nw.	38	nw.	11	11	11	9	4.8	64	1895	-30	1884

TABLE I.—*Climatological data for Weather Bureau Stations, January, 1895*—Continued.

Stations.	Elevation above sea-level, feet.	Length of record, years	Pressure, in inches: Mean pressure, 8 a.m. and 8 p.m. ÷ 2.	Pressure: Mean reduced.	Pressure: Departure from normal.	Temperature of the air, in degrees Fahrenheit: Mean max. and min. ÷ 2.	Temperature: Departure from normal.	Temperature: Maximum.	Temperature: Date.	Temperature: Mean maximum.	Temperature: Minimum.	Temperature: Date.	Temperature: Mean minimum.	Temperature: Greatest daily range.	Humidity and precipitation: Mean temperature of the dew-point.	Humidity: Mean relative humidity, per cent.	Precipitation, in inches.	Precipitation: Departure from normal.	Days with .01, or more.	Wind: Total movement, miles.	Wind: Prevailing direction.	Maximum velocity: Miles per hour.	Maximum velocity: Direction.	Maximum velocity: Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station: Absolute maximum.	Year.	Absolute minimum.	Year.
Up. Miss. Val.—Con																																
Dubuque	......	22	......	......	......	13.0	− 3.5	40	20	22	−20	28	4	32	......	......	1.44	− 0.2	6	......	nw.	....	......	...	17	0	14	....	62	1874	−32	1887
Keokuk	613	24	29.39	30.10	− .05	19.6	− 1.4	61	20	28	−11	30	11	33	12	77	1.44	− 0.2	7	6,242	nw.	42	w.	21	15	9	7	3.8	69	1894	−24	1884
Cairo	359	24	29.68	30.10	− .07	31.5	− 1.5	68	6	38	− 2	12	25	27	26	81	3.77	− 0.4	13	7,939	n.	52	sw.	25	8	10	13	6.2	73	1890	−16	1884
Springfield, Ill	644	16	29.36	30.09	− .08	21.5	− 4.1	60	18	30	−10	12	13	31	12	71	1.12	− 1.3	9	8,112	nw.	38	w.	21	12	8	11	5.5	68	1890	−22	1884
Hannibal	534	....	29.49	30.10	......	21.0	......	62	20	30	−10	30	12	32	14	75	1.57	......	8	6,893	w.	50	w.	21	15	6	10	5.1	....	....	....	....
St. Louis	571	25	29.48	30.13	− .03	26.2	− 2.5	64	18	34	− 8	12	19	31	17	71	1.65	− 0.8	11	9,530	nw.	56	sw.	21	18	5	8	4.1	74	1890	−22	1884
Missouri Valley.						18.4	− 1.4										0.82	− 0.3														
Columbia	......	6	......	......	......	24.6	− 5.8	69	20	36	− 7	27	14	38	......	......	1.23	− 0.8	6	5,653	se.	31	w.	21	12	6	13	5.6	74	1894	−16	1894
Kansas City	963	7	29.05	30.14	− .06	24.0	− 1.8	65	20	32	− 8	12	16	30	17	76	0.32	− 0.9	5	6,201	nw.	34	nw.	11	14	9	8	4.5	68	1890	−17	1892
Springfield, Mo	1,336	10	28.63	30.13	− .04	27.6	− 2.3	70	20	36	−12	12	19	34	20	76	2.33	+ 0.1	7	7,678	ne.	48	sw.	21	11	10	10	4.9	74	1890	−17	1894
Topeka	......	8	......	......	......	25.5	+ 0.2	68	20	36	− 8	12	15	45	......	......	0.57	− 0.6	4	......	s.	....	......	...	15	9	7	....	70	1894	−23	1892
Omaha	1,123	25	28.88	30.16	− .06	18.6	+ 1.4	63	20	28	−12	12	9	30	9	71	0.35	− 0.3	3	6,028	nw.	30	nw.	25	15	3	13	5.3	63	1895	−32	1884
Sioux City	1,165	6	28.80	30.14	− .04	14.2	− 2.5	52	19	23	−15	12	5	38	6	77	0.16	− 0.7	4	8,856	nw.	46	nw.	11	9	12	10	5.5	58	1891	−28	1892
Pierre §	1,470	20	28.45	30.15	− .05	8.7	+ 0.7	39	14	17	−16	23	4	35	3	80	0.71	+ 0.2	10	6,177	nw.	34	nw.	11	9	15	7	5.3	55	*	−39	1883
Huron	1,310	14	28.63	30.17	− .04	4.3	− 0.7	35	18	14	−23	12	− 6	44	− 1	78	0.91	+ 0.5	7	9,269	nw.	44	se.	4	11	13	7	5.3	55	1891	−43	1887
Northern Slope.						15.3	0.0										0.74	+ 0.1														
Havre	2,477	15	27.29	30.14	− .01	1.3	− 4.0	44	13	11	−26	7	− 8	46	− 2	84	1.06	+ 0.1	17	6,022	nw.	34	ne.	17	6	14	11	6.3	56	1892	−40	1886
Miles City	2,374	18	27.43	30.13	......	7.4	− 3.2	41	13	17	−26	26	− 2	44	2	78	0.80	+ 0.2	13	4,063	n.	29	nw.	14	11	14	6	5.2	54	1893	−45	1892
Helena	4,108	15	25.70	30.13	+ .01	17.2	+ 1.9	51	12	25	−15	27	10	35	9	71	1.95	+ 0.6	16	3,488	sw.	46	sw.	9	7	9	15	6.7	59	1893	−42	1893
Rapid City	3,280	10	26.50	30.09	− .09	16.6	− 2.6	53	10	27	− 7	28	6	49	7	67	0.25	− 0.1	11	5,605	n.	31	n.	24	11	10	10	5.9	69	1892	−37	1883
Cheyenne	6,105	24	23.82	30.14	− .05	24.8	+ 1.0	53	12	34	−12	27	15	34	12	62	0.29	0.0	5	9,850	nw.	44	w.	9	4	23	4	5.1	64	1888	−38	1875
Lander ‡	5,377	12	24.47	30.15	− .07	18.4	+ 3.7	57	13	32	−28	28	4	41	4	64	0.68	0.0	5	2,971	sw.	48	sw.	4	11	15	5	4.7	57	1892	−42	1883
North Platte	2,841	21	27.03	30.17	− .05	21.3	+ 3.4	56	22	32	−11	28	10	44	11	71	0.14	− 0.3	3	6,464	nw.	32	nw.	20	8	14	9	5.3	70	1880	−35	1888
Middle Slope.						27.1	+ 1.5										0.49	− 0.3														
Denver	5,287	24	24.61	30.13	− .06	28.4	+ 1.7	62	13	39	− 7	28	18	49	13	57	0.32	− 0.3	4	5,792	s.	37	nw.	31	11	16	4	4.5	76	1888	−29	1875
Pueblo	4,734	7	25.14	30.09	......	29.0	+ 0.7	64	13	42	− 7	26	15	55	10	51	0.44	+ 0.1	6	5,683	nw.	50	sw.	17	12	13	6	4.6	71	1892	−13	1891
Concordia	1,410	10	28.56	30.15	− .07	23.5	+ 2.1	69	20	34	− 6	12	13	42	12	69	0.54	− 0.5	5	5,476	n.	30	n.	31	17	8	6	3.7	72	1894	−25	1888
Dodge City	2,523	21	27.36	30.13	− .07	26.9	+ 3.3	65	19	37	2	27	17	34	17	73	0.58	+ 0.1	10	7,620	ne.	40	nw.	25	11	12	8	5.0	73	1887	−20	1883
Wichita	1,366	7	28.60	30.14	− .04	27.8	− 0.2	69	20	37	− 1	12	19	28	19	75	0.57	− 0.9	5	6,609	s.	41	nw.	20	11	12	8	4.8	72	1894	−14	1892
Oklahoma	1,239	....	28.75	30.13	......	33.2	......	70	*	43	− 1	30	24	35	23	73	0.93	......	3	6,767	n.	32	n.	11	15	8	8	4.4	....	....	....	....
Southern Slope.						......	......										......	......														
Abilene	1,749	10	28.22	30.12	− .08	41.6	+ 1.1	76	5	52	5	30	31	37	24	58	1.15	+ 0.2	3	6,441	s.	30	nw.	25	9	11	11	5.6	83	1890	− 5	1888
Amarillo	3,691	....	26.19	30.10	......	33.4	......	67	4	45	− 4	30	22	49	15	57	1.60	......	5	12,422	s.	76	w.	20	11	11	9	5.0	....	....	....	....
Southern Plateau.						45.4	+ 0.8										0.96	+ 0.3														
El Paso	3,813	17	26.18	30.12	− .05	45.8	+ 2.3	68	14	57	22	28	35	36	24	49	0.65	+ 0.1	3	8,628	nw.	47	sw.	20	7	14	10	5.3	77	1890	5	1881
Santa Fe	7,051	23	23.16	30.12	− .05	28.2	+ 0.4	48	12	36	− 4	28	20	25	12	53	1.51	+ 1.0	8	5,273	ne.	31	sw.	20	18	6	7	4.5	76	1879	−13	1883
Tucson	2,390	12	27.53	30.05	......	50.7	+ 1.3	72	11	62	28	25	39	39	34	62	0.63	− 0.2	6	3,312	nw.	29	s.	17	12	9	10	5.0	84	1881	14	1880
Yuma	141	20	29.86	30.01	− .07	54.6	+ 0.7	75	15	65	35	30	44	32	34	51	0.78	+ 0.4	1	5,523	n.	39	se.	16	19	7	5	3.4	80	1890	22	1883
Independence	3,950	....	25.96	30.08	......	37.8	− 0.6	69	13	46	19	28	29	32	23	57	1.24	0.0	7	6,433	nw.	48	se.	17	11	10	10	4.8	....	...	....	....
Middle Plateau.						28.0	− 0.5										2.59	+ 1.1														
Carson City	4,720	8	25.19	30.10	......	29.8	− 1.2	57	12	40	− 4	20	19	44	17	57	5.06	+ 3.2	11	......	s.	....	......	...	18	1	12	5.0	60	1893	−22	1890
Winnemucca	4,340	17	25.58	30.14	− .06	24.6	− 2.4	48	9	33	−14	26	16	39	17	72	1.40	+ 0.2	15	7,927	sw.	60	s.	4	8	6	17	6.5	57	1887	−28	1888
Salt Lake City	4,345	21	25.59	30.17	− .08	29.7	+ 2.0	52	16	37	0	28	22	27	21	73	1.32	− 0.2	15	4,571	se.	48	s.	5	4	6	21	8.0	54	1879	−20	1883
Northern Plateau.						25.4	+ 3.3										2.44	0.0														
Baker City	3,430	6	26.34	30.01	......	25.6	+ 3.3	47	13	33	− 2	28	18	30	19	76	2.99	+ 1.4	17	4,540	se.	30	se.	22	9	6	16	6.2	47	1895	−14	1890
Idaho Falls	4,742	6	25.14	30.19	......	16.6	+ 1.1	40	13	25	−32	28	8	38	12	81	1.22	− 1.4	13	5,655	nw.	52	s.	16	5	7	19	7.2	42	1893	−38	1883
Spokane	1,930	14	27.88	30.01	− .10	27.8	+ 6.8	47	13	34	10	31	22	29	23	83	3.04	+ 0.3	16	4,047	e.	39	sw.	13	2	6	23	8.2	55	1893	−30	1888
Walla Walla	1,018	10	28.88	30.01	− .15	31.8	+ 2.0	63	12	38	11	8	26	32	28	86	2.52	+ 0.4	18	4,315	s.	42	sw.	13	6	14	11	6.3	65	1888	−17	1888
N. Pac. Coast Reg.						39.1	+ 0.1										10.06	− 0.9														
East Clallam	......	......	......	......	......	37.0	......	54	12	42	26	26	32	16	......	......	15.44	......	16	......	e.	....	......	...	6	2	23	....				
Fort Canby	179	12	29.63	29.83	− .19	40.2	− 0.7	54	11	44	31	28	37	12	37	86	11.52	+ 2.5	21	13,795	e.	77	se.	12	4	3	24	8.2	60	1893	11	1888
Neah Bay	......	12	......	......	......	40.2	− 0.4	58	11	46	28	*	34	20	......	......	12.44	− 4.8	13	......	e.	....	......	...	6	3	22	....	59	*	8	1893
Olympia	......	18	......	......	......	37.4	− 0.4	56	12	42	25	*	32	18	......	......	9.85	+ 1.3	21	......	s.	....	......	...	2	7	22	....	60	1891	− 2	1888
Port Angeles	29	10	29.82	29.85	− .12	37.1	+ 2.4	56	12	42	26	7	32	16	33	86	5.91	+ 0.3	18	3,577	s.	26	e.	3	4	9	18	7.5	60	1892	− 1	1893
Port Crescent	......	......	......	......	......	34.4	......	49	13	40	21	7	29	17	......	......	8.31	......	14	......	e.	....	......	...	6		19	....	....	....	....	....
Pysht	......	......	......	......	......	36.2	......	48	30	41	25	*	31	16	......	......	12.07	......	17	......	e.	....	......	...	5	1	25	....	....	....	....	....
Seattle	119	....	29.74	29.87	......	39.3	......	58	12	43	28	28	35	18	35	84	6.13	......	16	3,888	s.	30	sw.	5	3	6	22	8.1	....	....	....	....
Tatoosh Island	86	11	29.75	29.85	− .17	40.5	+ 0.3	57	10	44	30	3	37	14	36	85	12.50	− 0.7	20	13,313	e.	72	e.	3	7	2	22	7.8	57	*	7	1893
Astoria	......	11	......	......	......	40.3	+ 0.2	60	12	45	28	28	35	16	......	......	14.84	− 5.2	24	......	......	....	......	...	2	6	23	....	60	*	10	1888
Portland, Oreg	157	24	29.75	29.93	− .16	37.3	− 0.5	57	12	42	25	26	32	20	33	85	8.53	+ 1.0	20	5,135	se.	44	sw.	13	2	10	19	7.5	62	1888	− 2	1888
Roseburg	523	18	29.31	29.89	− .24	40.0	− 0.3	62	9	46	20	28	34	26	35	83	5.05	− 1.6	19	2,671	se.	24	sw.	5	8	12	11	5.8	71	1888	− 6	1888
Mid. Pac. C'st Reg.						46.6	− 0.5										8.50	+ 2.8														
Eureka	64	9	29.87	29.93	− .20	46.4	+ 0.4	70	10	53	31	*	40	24	41	84	9.37	− 0.2	19	5,507	se.	36	se.	3	8	14	9	5.5	77	1888	20	1888
Red Bluff	342	18	29.63	30.00	− .15	43.8	− 1.5	66	31	50	29	29	38	29	39	85	8.29	+ 3.6	15	6,828	se.	37	se.	17	11	3	17	6.0	74	1891	18	1888
Sacramento	71	18	29.83	30.01	− .13	46.4	+ 0.7	60	13	52	30	26	41	20	41	85	8.42	+ 4.5	15	8,384	se.	48	se.	4	6	6	19	6.7	66	1891	19	1888
San Francisco	153	24	29.84	30.00	− .13	48.6	− 1.4	63	12	53	38	27	44	16	42	80	6.99	− 2.0	13	7,068	se.	44	s.	4	9	7	15	5.6	73	1887	29	1888
Point Reyes Light	......	6	......	......	......	47.7	− 0.5	60	10	54	34	28	41	21	......	......	9.48	− 4.0	16	......	s.	....	......	...	7	5	19	....	....	....	....	....
S. Pac. Coast Reg.						50.2	− 0.2										5.77	+ 3.7														
Fresno	332	8	29.66	30.03	− .12	45.3	+ 1.0	61	12	52	28	30	39	26	41	85	4.14	+ 2.8	14	3,830	se.	28	nw.	16	5	6	20	7.2	69	1892	20	1888
Los Angeles	330	18	29.66	30.02	− .07	52.2	− 1.1	77	10	61	37	26	44	27	43	76	5.84	+ 2.9	10	2,868	e.	18	sw.	16	13	4	14	5.2	84	1892	30	*
San Diego	93	24	29.92	30.02	− .08	53.2	− 0.5	77	11	61	36	29	45	25	45	78	7.33	+ 5.4	11	4,046	nw.	27	s.	16	17	6	8	4.2	80	1893	32	1894
San Luis Obispo	234	....	29.77	30.02	......	49.7	......	76	10	58	33	*	42	29	41	76	8.05	......	13	3,783	nw.	33	nw.	16	13	6	12	5.3	....	....	....	....

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.

* Two or more directions, dates, or years. † Received too late to be considered in departures, etc. ‡ Normals of temperature and precipitation and extremes of temperature combined with Fort Washakie records. § Normals of temperature and precipitation and extremes of temperature combined with Fort Sully records.

REV——4

TABLE II.—*Meteorological record of voluntary and other cooperating observers, January, 1895.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
Alabama.					
Alco	76	19	49.2	......	T.
Asheville*[1]	60[h]	2[e]	37.9[e]	......	......
Bermuda†	75	17	47.6	6.75	
Brewton†	79	19	46.8		
Carrollton*†[1]	70	14	43.6	9.27	T.
Citronelle†	70	22	49.9	6.85	
Claiborne Landing†	......	......	......	8.60	T.
Collirene*[1]	74	16	45.2	7.09	
Cordova†	......	......	......	8.61	
Daphne†*	81	17	49.6	4.73	0.2
Decatur†	66	3	38.2	7.61	T.
Demopolis†	......	......	......	7.34	
Elba	60	15	41.0	7.11	
Eufaula *a*†	70	22	49.4	7.18	
Eufaula *c*†	......	......	......	7.08	
Evergreen†	74	17	47.3	6.42	T.
Florence *a*†	......	......	......	9.33	4.2
Florence *b*†	69	9	38.7	8.34	4.5
Fort Deposit†	72	15	46.3	7.34	
Gadsden†	68	2	41.6	7.97	T.
Greensboro†	71	15	42.6	8.70	
Healing Springs†	76	15	42.8	7.06	
Highland Home†	71	18	47.2	7.19	
Jasper†	66	3	40.4	8.54	
Livingston†	73	16	45.2	7.37	
Lock No. 4	......	......	......	6.95	
Madison Station†	63	2	39.7	6.95	0.5
Maple Grove†	63	1	39.8	10.90	
Marion†	......	......	......	6.79	
Montgomery	......	......	......	......	T.
Mount Willing†	75	14	47.0	7.38	
Newbern†	70	16	43.8	6.85	0.2
Newburg†	72	1	39.8	7.05	1.3
Opelika†	69	19	47.2	6.31	
Oxanna*†[1]	66	8	41.6	7.13	
Pine Apple†	74	8	42.5	7.59	
Pushmataha†	74	16	46.9	7.08	1.0
Rock Mills†	66	11	42.0	7.23	
Scottsboro	67	1	39.8	10.76	3.0
Selma†	......	......	......	6.30	T.
Sturdevant†	......	......	......	2.78	
Tallassee Falls†	......	......	......	6.89	T.
Tuscaloosa†	69	15	42.1	7.42	
Union†	74	13	44.2	8.79	3.0
Union Springs†	71	14	46.0	6.12	T.
Uniontown†	72	10	45.2	6.89	
Valley Head†	64	6	39.2	7.32	......
Warrior†	......	......	......	8.16	
Wetumpka	......	......	......	6.02	
Wilsonville†	......	......	......	7.51	
Alaska.					
Juneau†	40	3	26.4	5.80	35.9
Killisnoo†	39	5	24.3	3.25	20.5
Arizona.					
Antelope Valley	......	......	......	8.00	
Benson *a**[8]	75	30	45.2	0.00	
Bisbee*†[1]	64	29	44.0	1.20	10.15
Buckeye†	83	26	53.4	1.90	
Calabasas†	70	24	46.6	0.88	T.
Casa Grande*[8]	66	35	53.4	0.45	
Dragoon†	......	......	......	1.23	2.5
Dragoon Summit*[8]	61	34	46.0	1.75	4.0
Dudleyville†	66	24	46.5	1.56	
Eagle Pass*[8]	......	24	37.9	2.50	1.0
Farley's Camp†	75	26	50.0	6.80	
Flagstaff†	44	−13	25.6	12.60	126.0
Fort Apache	62	12	37.6	1.89	0.1
Fort Grant†	68[k]	26[k]	44.2[k]	1.65	0.8
Fort Huachuca	68	21	44.4	1.00	8.4
Gila Bend*[8]	73	35	53.6	0.81	
Globe†	61	25	43.2	2.33	T.
Holbrook†	56	15	35.4	2.46	1.9
Keams Canyon†	54	0	30.1	2.73	8.2
Maricopa*[8]	72	34	49.9	0.61	
Mount Huachuca†	64	21	43.6	1.84	9.5
Natural Bridge†	......	......	......	7.16	T.
Navajo*†[3]	......	16	33.7	1.60	T.
Nogales	77	20	50.2	1.82	3.0
Oracle†	67	26	46.0	2.39	2.0
Oro	......	......	......	2.04	
Pantano*[8]	70	30	48.3	1.00	
Parker†	74	23	49.9	1.88	
Payson	......	......	......	7.85	
Peoria†	69	31	50.2	1.72	
Red Rock	67	28	46.0	0.60	
Reymert†	70	28	49.1	3.86	
Rye†	64	20	43.5	5.56	
San Carlos	66	24	44.0	2.16	
San Simon*[8]	76	30	46.6	0.55	4.0
Show Low	......	......	......	3.45	11.0
Signal†	68	26	47.6	3.80	
Sulphur Spring Valley†	......	......	......	0.58	5.0
Texas Hill*[8]	78	29	53.0	0.00	
Tucson *c*†	76	27	52.0	0.56	
Whipple Barracks†	64	12	35.2	4.37	T.
Wilgus†	......	......	......	1.35	8.0
Willcox*[8]	65	22	47.5	0.11	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
Arizona—Cont'd.					
Yuma*[6]	70	37	56.2	0.77	
Arkansas.					
Arkadelphia†	......	......	......	7.07	4.0
Arkansas City†	......	......	......	5.30	......
Bee Branch†	72[f]	1[f]	39.8[f]	4.15	10.0
Blanchard Springs†	77	11	40.8	5.97	1.0
Brinkley†	70	11	39.0	6.18	7.0
Camden *a*†	......	......	......	7.58	3.0
Camden *b*†	78	12	40.2	7.68	1.9
Conway*[1]	70	0	35.5	4.33	11.5
Corning†	68	−3	31.6	3.47	10.8
Dallas†	71	8	37.2	4.20	10.0
Dardanelle†	......	......	......	2.90	16.0
Elon†	69[g]	12[g]	42.2[g]	5.55	0.8
Fayetteville†	71	−4	33.6	2.97	16.5
Forrest†	72	10	37.6	6.99	5.0
Fort Smith	......	......	......	......	12.4
Fulton†	......	......	......	3.82	3.0
Helena *a*†	......	......	......	9.17	4.5
Helena *b*†	75	12	39.4	8.63	5.0
Hot Springs *a*	70	5	37.2	6.25	13.5
Hot Springs *b*	......	......	......	6.65	8.0
Jonesboro†[g]	70	3	40.2	1.11	......
Keesees Ferry†	72	−5	32.6	2.73	9.8
Kirby	......	......	......	8.30	10.0
La Crosse†[f]	68	−1	32.6	2.58	6.0
Little Rock	......	......	......	......	7.0
Lonoke*[1]	73	13	40.5	5.00	6.2
Luna Landing*[6]	73	14	43.3	......	......
Mount Nebo†	60	2	30.7	3.73	17.0
New Gascony*[1]	73[j]	15[g]	39.2[k]	9.38	4.5
Newport *a*†	......	......	......	5.25	10.4
Newport *b*†	70	5	36.4	5.85	11.2
Newport *c*†	71	5	35.4	4.97	10.5
Osceola†	68	6	36.2	5.89	11.0
Ozark†	73	7	36.7	1.87	14.2
Pocahontas†[e]	67	1	32.3	3.07	7.0
Rison†	75	9	38.6	7.94	4.0
Rogers†	65	−8	27.2	......	......
Russellville	78	2	36.0	......	......
Searcy†	73	19	44.6	3.91	13.0
Stuttgart†	74	12	38.6	8.65	5.0
Texarkana†	75	19	42.4	3.29	......
Washington†	74	12	40.0	4.59	2.5
Winslow†	64	−3	31.4	3.93	21.0
Witts Springs†	......	......	......	3.01	13.0
California.					
Adin	49	−12	25.4	4.23	17.0
Ager	54	12	34.4	3.14	2.8
Arlington Heights	76	32	49.4	6.09	
Athlone*[8]	64	36	46.7	3.21	
Bakersfield	68	27	48.5	2.49	
Ballast Point L. H.	......	......	......	5.51	
Barstow†	64	15	41.8	1.06	
Bear Valley†	......	......	......	29.22	209.0
Berkeley	62	34	46.6	10.88	
Bethany*[1]	60	32	47.2	4.73	
Bishop†	61[k]	9[k]	33.2[k]	2.60	12.0
Bishop Creek*[8]	59	11	36.0	1.10	T.
Boca*[8]	55	−23	26.1	8.36	83.0
Borden*[8]	60	28	47.1	2.91	
Caliente*[8]	67	37	49.3	5.28	
Calloway Canal	69	28	50.0	2.43	
Cape Mendocino L. H.	......	......	......	12.00	
Cedarville†	58	6	29.4	1.51	7.8
Centerville*[1]	68	37	51.2	6.81	
Chicago Park*[1]	58	26	39.0	18.17	38.0
Chino*[6]	71	28	47.8	9.02	
Chico*[8]	66	33	48.8	11.77	
Claremont†	70	30	47.0	8.26	
Cloverdale*[1]	62	31	48.8	26.45	
Colegrove	......	......	......	5.84	
Corning*[8]	64	30	44.2	14.62	
Crescent City†	62	31	46.3	12.16	
Crescent City L. H.	......	......	......	11.40	
Davisville *b*	83	33	52.4	8.71	
Delano*[8]	69	30	47.8	2.79	
Delta*[8]	55	30	40.2	18.55	24.0
Drytown	63	28	44.6	9.89	
Dunnigan*[8]	64	30	47.2	10.38	
Durham*[1]	62	30	45.1	8.92	
East Brother L. H.	......	......	......	8.35	
Edgwood*[8]	51	11	33.1	4.56	23.0
Edmanton*[1]	46	12	29.2	26.11	177.0
Escondido	88	29	50.1	10.55	
Evergreen	......	......	......	6.56	
Fall Brook*[1]	78	32	48.4	12.52	
Florin*[5]	60	29	46.9	7.08	
Folsom City *b**[1]	64	31	47.1	11.24	
Fordyce Dam†	......	......	......	31.34	330.0
Fort Ross	......	......	......	28.50	......
Fremontville*[1]	78	31	49.8	6.76	
Georgetown†	61	25	39.8	20.52	50.0
Glendora	......	......	......	12.24	
Gorman Station†	......	......	......	6.23	
Goshen*[8]	62	29	46.0	3.74	
Grass Valley *a*	......	......	......	22.26	17.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
California—Cont'd.					
Greenville*†[1]	44	−2	25.5	23.78	113.5
Healdsburg*[1]	60	30	43.2	27.69	
Hendersons Ranch	......	......	......	6.35	
Hollister *b*	......	......	......	5.74	
Hueneme	......	......	......	4.78	
Humboldt L. H.	......	......	......	9.82	
Hydesville†	65	24	44.0	10.45	
Independence	......	......	......	......	0.5
Indio *a**[8]	59	28	48.0	6.01	
Iowa Hill*[1]	64	29	41.1	18.64	54.0
Jackson	56	27	39.8	12.04	10.2
Jolon	......	......	......	6.16	
Julian†	64	21	41.4	16.32	12.0
Keeler*[8]	60	30	43.9	0.35	
Keene*[8]	65	25	43.9	6.03	
Kennedy Gold Mine	58	26	42.8	13.11	6.0
Kernville	......	......	......	5.10	3.0
King City*[8]	70	28	52.9	3.89	
Kingsburg*[8]	58	30	46.4	3.33	
Kono Tayee	53	31	42.7	14.45	
Lagrange*[5]	59	32	46.8	5.17	
Laguna Mountains	......	......	......	19.24	......
La Porte*†[1]	50	13	29.8	22.01	176.0
Lemoore *a**[8]	64	29	46.4	2.32	
Lick Observatory†	58	23	36.4	10.00	51.0
Lime Kiln	80	30	50.0	......	......
Lime Point L. H.	......	......	......	7.27	......
Lodi	59	29	46.4	7.46	
Los Alamos	......	......	......	6.90	
Los Gatos *b*	62	30	44.9	14.67	
Malakoff Mine	......	......	......	24.40	......
Mammoth Tank*[8]	72	35	50.9	0.80	
Manzana	60	20	39.4	2.79	
Mare Island L. H.	......	......	......	8.21	......
Mariposa*[1]	67	25	42.2	11.79	2.0
Merced*[8]	59	30	45.8	2.12	
Middletown*†[1]	64	26	43.6	28.90	
Mills College	......	......	......	9.79	
Milton (near)*[1]	62	32	49.0	8.65	
Modesto*[8]	61	28	45.8	4.05	
Mohave*[8]	62	24	42.9	2.66	
Mokelumne Hill*[3]	......	28	41.4	10.06	3.0
Monterey*[8]	66	30	50.8	6.30	
Mountain View	......	......	......	5.60	
Mount Glenwood*[1]	64	32	45.9	15.40	
Mutah Flat	......	......	......	9.80	
Napa *b*	62	32	48.2	9.35	
Needles†	67	31	50.8	1.38	
Nevada City†	61	19	38.2	22.87	48.0
Newcastle *a*†	56	26	41.9[f]	13.10	
Newhall*[8]	74	24	46.9	7.11	
Nordhoff†	84	30	51.6	8.61	
Oakland *a*	61	35	47.2	11.32	
Ogilby*[8]	78	40	56.8	0.45	
Oleta*[1]	60	22	39.8	13.25	6.0
Ontario *b*	72	31	49.0	10.65	
Orangevale†	59	29	44.8	9.53	
Orland*[8]	60	30	43.7	8.25	
Ormonde†	......	......	......	22.23	82.0
Oroville *b*	63	32	46.8	11.92	
Palermo†	64	27	46.2	10.08	
Pasadena†	72	34	49.9	7.56	
Paso Robles *b*	64	26	45.6	6.43	
Petaluma*[1]	61	30	47.3	9.89	
Piedras Blancas L. H.	......	......	......	4.86	......
Pigeon Point L. H.	......	......	......	6.52	......
Pilot Creek	......	......	......	20.54	99.0
Placerville *b*	60	21	40.2	17.85	6.0
Point Ano Nuevo L. H.	......	......	......	4.91	
Point Arena L. H.	......	......	......	13.61	
Point Bonita L. H.	......	......	......	12.16	
Point Conception L. H.	......	......	......	3.86	
Point Fermin L. H.	......	......	......	4.55	
Point George L. H.	......	......	......	10.04	
Point Hueneme L. H.	......	......	......	5.31	
Point Lobos	62	38	47.8	5.61	
Point Loma L. H.	......	......	......	3.74	
Point Montara L. H.	......	......	......	8.65	
Point Pinos L. H.	......	......	......	9.22	
Point Reyes L. H.	......	......	......	9.43	
Point Sur L. H.	......	......	......	8.27	
Pomona (near)	72	30	51.7	8.73	
Portersville*[8]	68	32	48.8	3.82	
Poway*[3]	......	29	45.8	12.65	
Ravenna*[5]	68	33	46.0	2.35	
Redding *b*†	66	30	43.4	12.84	1.0
Redlands *a*	......	......	......	8.66	
Reedley (near)*[1]	64	32	47.8	4.00	
Represa	60	27	45.3	11.36	
Rio Vista	60	28	45.0	7.96	
Riverside†	79	27	49.8	6.21	
Roe Island L. H.	......	......	......	6.93	
Rosewood*[1]	62	23	40.7	11.93	5.0
Sacramento *a*	62	30	47.2	9.17	
Salinas	......	......	......	5.05	
Salton*[8]	69	37	50.9	......	
San Bernardino†	73	27	47.7	7.39	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	Ins.	Ins.
San Jacinto†	77	27	48.0	7.81	
San Jose b	64	21	45.0	6.28	
San Leandro *1	67	37	51.5	8.21	
San Luis L. H	......	......	......	6.04	
San Luis Obispo a	......	......	......	8.02	
San Mateo *6	62	35	49.6	9.50	
San Miguel *8	63	26	47.8	4.22	
San Miguel Island †	70	39	54.9	4.10	
San Rafael †	59	27	45.5	18.75	
Santa Ana *8	78	38	48.7	7.10	
Santa Barbara a	72	38	51.7	6.25	
Santa Barbara L. H	......	......	......	6.34	
Santa Clara a *6	63	30	47.5	5.93	
Santa Clara b	65	26	43.1	4.37	
Santa Cruz b †	68	32	50.8	9.11	
Santa Cruz L. H	......	......	......	9.18	
Santa Maria	73e	34e	52.7e	4.43	
Santa Monica *8	80	31	51.7	6.76	
Santa Paula b †	70	29	46.0	6.90	
Santa Rosa *8	59	30	48.4	18.42	
Saticoy †	......	......	......	6.78	
Shasta Springs †	47	12	33.9	11.82	108.5
Skye Valley	......	......	......	15.74	......
Sneddens Ranch	......	......	......	6.31	
SE. Farallone L. H	......	......	......	8.45	
Stanford University	64	31	46.6	6.54	
Stockton a	59	30	45.6	5.24	
Summerdale †	......	......	......	16.04	74.0
Susanville *†1	56	—3	29.9	10.29	65.5
Sutter Creek *5	56	22	38.2	9.34	......
Tehama *8	68	32	46.1	11.23	
Tejon Ranch	......	......	......	5.05	......
Templeton *8	64	28	46.2	7.71	
Trinidad L. H	......	......	......	8.08	......
Truckee *8	45	—11	22.7	11.73	109.0
Tulare b	......	......	......	4.11	
Tulare c	70	28	48.7	3.52	
Turlock b †	59	25	44.8	3.66	
Ukiah †	63	25	44.3	19.20	
Upper Lake	65	28	43.1	14.92	
Upper Mattole *1	66	30	48.4	23.37	
Vacaville a *1	62	32	46.6	12.81	
Ventura †	74	36	51.8	6.11	
Visalia	......	......	......	4.30	
Volcano Springs *8	80	40	58.4	1.42	
Walnut Creek	62	24	45.0	9.64	
Wenrich Ranch	......	......	......	4.79	
West Point †	......	......	......	14.80	......
Wheatland	59	31	45.2	8.95	
Williams *4	65	30	46.1	6.32	
Willows b *8	64	32	43.7	9.97	
Wilmington *5	71	38	55.0	......	
Winchester †	74	27	48.6	6.17	
Wire Bridge *5	61	28	45.0	14.44	
Yerba Buena L. H	......	......	......	7.10	
Yreka †	53	9	32.2	5.30	......
Yuba City *5	62	34	47.8	9.58	
Engineers Quarters ‡	......	......	......	15.25	37.5
Morses House ‡	......	......	......	18.00	59.0
Grass Valley ‡	......	......	......	16.65	45.4
Deep Creek ‡	......	......	......	13.14	48.2
Holcomb Creek ‡	......	......	......	10.06	58.5
Squirrel Inn ‡	......	......	......	14.22	......
Green Valley ‡	......	......	......	14.38	52.0
Tunnel No. 2 ‡	......	......	......	9.94	32.3
Colorado.					
Abbott	......	......	......	0.65	6.5
Alma †	36	—17	14.0	1.31	13.0
Antlers †	57	—17	21.7	1.36	......
Boulder †	58	—7	27.8	0.30	5.3
Box Edler	......	......	......	0.48	8.0
Breckenridge †	40	—26	12.0	3.29	33.0
Byers *1	60	—10	21.1	......	......
Canyon †	63	—7	31.6	0.08	1.0
Climax *†1	33	—16	9.2	5.80	58.0
Collbran *	......	......	......	2.96	29.6
Colorado Springs †	58	—10	27.8	0.10	0.4
Cope †	56	—4	24.0	1.10	11.0
Craig	......	......	......	0.42	10.2
Crook	56	—27	15.8	0.80	8.0
Deer Trail *5	58	—8	26.2	......	3.0
Delta †	52	2	28.4	1.15	3.5
Denver	......	......	......	......	5.0
Divide Exper. Station	53	—12	23.6	0.19	2.0
Downing †	60	—2	30.2	0.23	
Dumont	56	—10	25.5	0.40	4.0
Durango †	48	—5	26.3	2.10	18.5
First View *6	52	0	23.9	......	5.0
Fleming	......	......	......	1.30	13.0
Fort Collins †	57	—10	23.9	0.24	2.2
Fox	......	......	......	0.73	8.5
Garnett	......	......	......	T.	
Glen Eyrie †	56	—8	27.2	0.11	......
Gold Hill *5	52	—6	28.2	0.31	3.1
Grand Junction †	50	12	30.6	1.24	10.5
Greeley †	......	......	......	0.27	3.0
Gunnison † j	40	—32	5.8	2.79	......
Colorado—Cont'd.	°	°	°	Ins.	Ins.
Holly	......	......	......	0.60	6.0
Holyoke	......	......	......	0.42	4.2
Hotchkiss	......	......	......	0.95	......
Hugo *5	62	—6	25.3	......	6.0
Hugo (near) †	58	—10	24.8	0.15	......
Husted †	62	—11	28.2	0.10	0.2
Julesburg †	55	—17	20.1	0.05	3.5
Kit Carson *1	62	0	28.4	......	......
La Jara †	56	—6	25.8	0.22	2.8
Lake Moraine †	44	—10	18.0	0.80	8.0
La Porte	......	......	......	0.38	3.8
Las Animas †	65	—12	24.4	0.60	6.0
Lay *†1	44	—30	17.0	1.22	12.2
Le Roy †	54	—10	21.6	0.73	7.3
Loveland	......	......	......	0.28	3.6
Longmont †	59e	0	27.0e	0.32	3.2
Manhattan	......	......	......	0.70	10.0
Meeker †	52	—23	22.0	1.66	22.2
Minneapolis †	70	—16	28.5	0.85	8.5
Monte Vista	49	—17	19.4	0.19	4.0
Moraine †	45	—10	23.0	0.42	5.5
Ouray †	49	—2	23.4	6.85	68.8
Pagodo (near) †	43	—24	16.8	3.00	30.0
Paonia †	......	......	......	2.60	11.0
Parachute †	44d	—10d	22.0d	1.65	16.0
Pueblo	......	......	......	......	5.0
Rangely †	49	—28	11.3	1.18	13.5
Red Cliff	......	......	......	3.35	33.5
Rico	......	......	......	7.20	72.0
Rocky Ford †	65	—11	26.9	0.26	2.6
Ruby †	......	......	......	14.44	144.0
Saguache †	48	—9	18.6	0.30	3.0
St. Cloud	......	......	......	0.22	2.2
San Juan †	44	—29	10.2	2.49	25.2
San Luis †	53	—12	21.6	0.81	8.2
Santa Clara *†1	56	—6	24.5	0.70	7.0
Seibert †	......	......	......	0.32	7.0
Smoky Hill Mine †	60	—12	27.8	0.60	6.0
Springfield †	......	......	......	0.42	4.2
Spring Gulch †	......	......	......	1.64	26.0
Stamford *1	46	—10	20.8	1.40	14.0
Sunnyside d	49	—12	19.5	1.22	13.2
Surface Creek †	47	—3	26.5	2.90	29.0
Thon †	59	—11	27.4	0.04	2.0
T. S. Ranch †	48	2	26.6	1.50	11.5
Twin Lakes	......	......	......	1.60	32.0
Vernon †	60	—7	26.8	1.53	6.5
Vilas	......	......	......	0.80	8.0
Wallet †	......	......	......	1.00	10.0
Watkins *1	50	0	25.2	......	......
Yuma	......	......	......	1.20	12.0
Connecticut.					
Bridgeport *1	46	6	26.7	5.65	12.7
Canton	45	—4	23.0	3.73	14.0
Colchester	50	3	25.2	4.79	11.5
Greenfield Hill	......	......	......	5.63	13.8
Hartford b	......	......	......	4.64	17.0
Hartford c	45	5	25.3		
Lake Konomoc	......	......	......	5.38	
Middletown	48	0	25.5	5.66	17.5
New Hartford b	......	......	......	4.64	17.0
New Haven	......	......	......	......	13.9
New London	......	......	......	......	10.0
North Grosvenor Dale	44	—6	21.4	4.45	17.0
Norwalk	50	0	25.1	4.35	11.0
Southington *1	45	1	23.8	4.33	20.0
South Manchester	......	......	......	4.42	14.0
Storrs	48	1	24.1	5.78	14.8
Thompson *1	46	0	23.1	......	......
Voluntown †	55	0	27.4	5.61	
Wallingford	......	......	......	5.59	13.2
Waterbury †	48	3	26.0	4.86	22.0
West Simsbury	......	......	......	3.96	19.0
Windsor	42	—4	22.3	4.68	18.7
Delaware.					
Dover †	60	14	32.4	5.47	6.0
Kirkwood 2	......	......	28.0		
Milford	62	12	34.0	4.85	7.5
Millsboro	65	13	33.7	5.29	7.5
Newark	53	7	28.6	4.85	4.5
Seaford †	61	12	33.0	4.63	10.5
Wilmington	55	12	31.2	5.47	4.5
District of Columbia.					
Dist'ing Reservoir *5	55	5	30.7	3.12	
Receiving Reservoir *5	55	8	31.1	4.32	
Washington					8.7
West Washington	64	7	33.4	4.26	10.6
Florida.					
Amelia †	73	24	52.1	4.50	
Archer †	84	25	58.4	5.05	
Avon Park †	86	35	63.8	1.28	
Brooksville	80	34	59.0	4.37	
Clermont †	83	34	61.0	4.07	
De Land †	83	31	60.2		
Eustis †	85	29	60.6	3.38	
Federal Point †	83	28	57.7	2.51	
Fort Meade †	83	35	62.0	2.17	
Florida—Cont'd.	°	°	°	Ins.	Ins.
Grasmere †	82	31	61.0	4.02	
Green Cove Springs †	81	25	55.0	5.43	
Homeland †	82	34	60.6	1.82	
Hypoluxo *†1	82	44	66.8	1.70	
Kissimmee †	84	33	62.8	0.70	
Lake City †	77	27	58.1	5.86	
Manatee †	83	32	59.8	2.41	
Merritts Island †	80	36	62.8	2.26	
Moseley Hall †	73	24	54.0	9.26	
Mullet Key †	72	35	58.8	1.85	
Myers †	83	39	63.8	2.06	
New Smyrna †	81	32	58.7	1.44	
Oak Hill *1	78	37	62.6	......	
Ocala *†1	83	28	57.9	1.60	
Orange City †	83	31	60.4	2.07	
Orange Park	77	24	54.6	4.43	
Orlando †	85	36	62.2	1.29	
Pensacola	......	......	......	......	T.
Plant City †	85e	34e	63.1e	3.08	
St. Francis Barracks	82	32	57.4	3.00	
Tallahassee †	72	22	50.3	6.80	
Tarpon Springs †	80	29	58.6	3.65	
Georgia.					
Adairsville †	63	2	37.4	9.29	0.2
Alapaha †	74	21	50.2	10.77	
Albany †	74	20	49.4	10.40	
Americus †	72	15	49.2	8.44	......
Athens a	69	6	40.7	7.55	T.
Athens b †	65a	9a	41.4a	6.65	......
Atlanta	......	......	......	......	T.
Augusta	......	......	......	......	T.
Bainbridge b †	......	......	......	8.40	
Blakely *†6	68	20	48.1	10.10	
Brag †	77	17	47.8	9.43	......
Brunswick †	74	24	50.7	4.45	
Camak †	64	10	42.0	7.53	......
Canton †	......	......	......	8.87	T.
Clayton †	65	1	37.9	10.49	6.0
Columbus †	76	20	48.4	7.45	
Covington	67	8	42.4	6.47	T.
Dahlonega †	67	1	38.7	10.44	3.0
Darien †	78	20	56.6	4.12	
Dublin b †	......	......	......	9.60	
Elberton †	71	5	39.3	7.09	
Fleming †	79	18	49.0	7.05	
Forsyth *1	74	15	47.6	6.05	T.
Hawkinsville †	78	26	49.4	9.72	
Hephzibah *†6	64	12	46.3	7.75	......
Lagrange †	66	9	43.0	7.65	......
Leverett d	70	9	41.1		
Louisville †	75	12	44.8	8.79	
Macon b †	......	......	......	7.35	
Marietta †	66	5	39.8	6.23	T.
Marshallville †	71	15	47.4	8.55	
Millen	76e	24e	48.5e	9.19	......
Monticello *†1	68	14	44.6	6.14	
Morgan †	74	19	49.0	7.66	
Piscola	74	22	51.6	11.75	
Point Peter *1	60	9	40.6	8.10	......
Poulan †	73	15	48.1	9.83	
Quitman †	72	20	51.0	11.64	
Ramsey †	67	2	40.0	7.43	3.8
Resaca †	......	......	......	9.06	2.5
Reynolds †	......	......	......	7.75	
Rome †	69	5	40.2	10.29	1.0
Talbotton †	69	12	45.6	7.64	......
Thomasville †	75	20	50.7	10.17	
Toccoa †	70	4	40.8	8.46	6.0
Washington †	67d	8d	43.8d	6.33	
Whitesburg †	......	......	......	7.87	
Idaho.					
American Falls †	42	—22	22.2	0.95	
Atlanta †	40	—6	19.5	4.28	53.0
Bliss †	55	—6	26.9	1.27	5.2
Boise Barracks †	52	0	31.0	2.48	7.9
Challis	46	—16	17.6	0.30	3.0
Chesterfield †	44	—34	15.5	0.77	18.0
Fort Sherman †	45	2	25.7	7.00	57.0
Fraser †	50	5	29.8	2.87	
Garden Valley †	44	—10	22.4	5.90	21.0
Gibbonsville †	......	—22	......	3.15	41.0
Grangeville	51	2	28.7	2.06	16.9
Hailey †	48	—22	18.8	4.84	43.6
Idaho City †	40	—12	22.0	3.23	30.7
Idaho Falls	......	......	......	......	11.0
Kootenai †	46	—3	21.0	4.10	29.5
Lake †	36	—24	10.8	4.80	48.0
Lewiston †	52	2	30.4	2.51	13.5
Lost River	......	......	......	2.40	22.8
Martin †	45	—21	16.0	2.65	41.0
Moscow †	46	1	28.6	2.13	20.1
Murray †	44	—5	24.8	5.49	49.0
Nampa	51	2	28.8	0.59	5.5
Oakley †	44	—13	26.8	1.15	11.5
Paris †	51	—20	20.0	0.97	9.7
Payette †	46	—4	26.2	2.08	13.7
Salubria †	46	—17	21.4	4.14	38.6

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
Idaho—Cont'd.					
Swan Valley†	42	-31	21.8	1.55	40.8
Three Creek†	55	-25	24.6	1.27	12.7
Illinois.					
Albion†	60	-9	26.3	4.25	16.0
Atwood*†[3]	......	-10	15.6	0.93	2.5
Aurora	48	-16	14.8	1.53	13.6
Beardstown†	......	......	......	1.45	15.0
Bloomington†	55	-13	17.5	1.26	7.9
Braidwood†	54	-8	19.8	1.82	13.0
Bushnell†	52	-15	18.6	1.62	15.0
Cairo	......	......	......	......	15.1
Carlinville†	65	-7	22.8	1.08	5.8
Carlyle	......	......	......	2.30	......
Carrollton	......	-8	......	......	6.2
Chemung*†[1]	42	-18	12.9	1.47	16.5
Chester†	......	......	......	3.58	10.0
Chicago	......	......	......	......	15.4
Clear Creek†	55	-16	18.1	1.00	7.0
Cordova	......	......	......	1.89	16.5
Decatur†	60	-10	22.0	1.19	5.5
Dixon	49	-15	13.9	1.22	9.0
East Peoria†	55	-14	20.0	1.68	10.5
Effingham†	48	-9	20.6	1.05	10.5
Evanston*[10]	50	-15	17.0	......	
Fort Sheridan†	50	-12	15.5	2.61	12.2
Galva†	51	-17	16.4	1.33	9.0
Gilman†	55	-10	19.6	0.87	8.0
Golconda†	65	-2	31.8	3.79	13.6
Grafton†	......	......	......	0.38	3.6
Greenville†	64	-8	23.6	1.98	8.5
Griggsville†	60	-10	21.9	1.36	13.8
Halliday*[5]	56[d]	-3[d]	27.9[d]	2.80	11.0
Havana†	58	-7	22.8	1.36	8.0
Herrins Prairie*[1]	58	0	28.1	3.35	10.5
Jordans Grove†	60	-4	27.4	1.50	4.8
Kankakee†	55	-9	17.2	1.00	......
Lagrange†	52	-13	17.5	1.64	17.8
Lexington*†[1]	50	-9	19.3	1.23	4.8
Louisville†	59	-8	26.7	3.46	10.3
Martinsville†	54	-11	22.6	2.56	15.5
Mascoutah*[5]	58	-6	24.0	3.36	10.6
Mattoon*[1]	51	-1	26.3	0.57	3.2
Monmouth†	49	-15	17.4	1.42	12.0
Mount Carmel†	......	......	......	5.84	20.0
Mount Pulaski	58	-9	21.0	1.25	8.8
Olney *a**[1]	59	-10	26.6	4.25	16.4
Olney *b**[1]	52	-7	21.8	4.64	......
Oregon	46	-19	13.1	1.35	12.5
Oswego*[1]	46	-14	13.3	1.33	9.6
Ottawa†	52	-12	15.6	1.22	8.5
Palestine†	50	-11	24.8	4.37	17.5
Paris†	56	-11	22.2	1.71	13.0
Peoria *a*†	......	......	......	1.47	9.0
Peoria *b*	50	-10	20.2	1.32	7.0
Philo	57	-16	19.8	1.08	5.2
Rantoul*†[5]	52	-11	19.8	1.34	7.8
Riley†	45	-15	12.4	2.09	14.4
Rockford*†[1]	48	-15	14.2	2.27	18.5
Rushville	59	-9	21.8	1.75	13.0
St. Johns*†[3]	54	-1	25.8	2.07	8.0
Springfield	......	......	......	......	6.3
Streator†	48	-11	17.0	1.55	5.5
Sycamore*†[1]	44	-12	15.1	1.35	9.3
Tuscola*†[1]	49	-9	21.5	0.83	5.2
Walnut†	51	-14	15.8	1.92	12.0
Winnebago†	45	-16	12.2	1.42	13.0
Zion†	62[j]	-10[m]	20.0[l]	1.82	13.2
Indiana.					
Angola*[1]	46	-10	19.4	2.65	21.2
Ashboro	58	-13	23.2	3.08	17.5
Butlerville†	58	-15	25.4	7.23	21.6
Cambridge City†	55	-17	22.0	3.27	11.4
Cannelton†	70	-4	29.0	4.06	14.4
Clinton†	55	-11	23.0	......	14.2
Columbia City*[1]	50	-12	18.8	1.92	14.5
Columbus†	59	-13	23.6	4.06	18.5
Connersville†	58	-15	22.6	4.00	13.0
Degonia Springs*[4]	62	-8	28.1	5.01	22.5
Delphi	57	-18	19.0	2.64	21.5
Edwardsville*†[1]	60	-10	20.1	5.52	22.8
Evansville†	60	-8	25.6	3.95	16.0
Farmland†	56	-10	21.0	2.76	14.0
Franklin*[1]	53	-16	23.1	3.43	17.5
Hammond†	54	-12	13.9	3.00	19.0
Huntingburg†	58	-6	27.5	12.50	15.0
Huntington	54	-11	19.8	2.60	22.0
Indianapolis	......	......	......	......	19.9
Jasper†	58	-10	26.9	4.49	22.0
Jeffersonville	60	-11	29.7	4.18	16.5
Kokomo†	54	-17	20.9	2.02	18.2
Laconia	62	-11	28.5	4.55	9.5
Lafayette†	56	-24	19.7	2.92	13.2
Logansport *a*†	......	......	......	2.07	18.4
Logansport *b*	48	-14	20.6	2.19	22.0
Madison†	60	-13	29.0	7.37	26.5
Marengo*[1]	57	-12	28.2	9.80	22.0
Marion†	55	-18	21.3	1.84	15.0
Indiana—Cont'd.					
Mauzy†	56	-16	22.1	4.51	22.5
Mount Vernon†	......	......	......	3.91	15.2
Muncie[4]	51	-7	24.8	......	......
Plymouth†	52	-18	18.7	2.14	17.5
Princeton*†[1]	57	-9	26.0	4.61	11.6
Rensselaer†	......	......	......	1.85	16.0
Rockville†	55	-14	21.2	1.69	12.5
Rushville†	......	......	......	3.92	18.0
Scottsburg*[1]	56	-10	26.1	5.66	19.0
Seymour†	58	-12	23.8	6.57	26.8
Shelbyville	57[d]	-13[d]	23.4[d]	4.15	14.0
South Bend†	53	-12	17.8	3.77	32.0
Sunman*[5]	47	-16	19.8	5.65	11.5
Terre Haute†	47	-9	23.5	2.26	12.6
Valparaiso†	52	-18	15.7	1.95	16.0
Vevay	58	-10	28.3	5.68	18.0
Vincennes†	60	-11	25.5	4.58	16.5
Worthington†	57	-12	24.3	4.25	15.0
Indian Territory.					
Eufaula†	......	......	......	1.20	14.0
Healdton†	75	0	40.4	0.46	6.0
Kemp†	76	9	40.2	1.49	7.0
Lehigh†	76	-1	37.6	0.92	6.0
Pursell†	72	-2	36.6	0.95	4.5
Tahlequah	76	5	37.3	2.20	19.5
Tulsa†	......	......	......	1.20	......
Iowa.					
Afton	62	-14	14.6	0.40	4.0
Algona*[1]	44	-18	9.9	0.49	4.9
Alta†	45	-15	10.2	0.44	5.0
Amana†	52	-19	12.8	1.26	9.0
Ames *b*	59	-22	11.8	0.09	......
Ames *c*	......	......	......	0.24	......
Atlantic†	64	-14	16.1	0.10	0.5
Atlantic (near)	61	-13	16.6	0.32	1.5
Audubon	60	-15	15.3	0.40	4.0
Belle Plaine	45	-16	12.4	2.08	17.0
Bonaparte†	64	-17	17.8	1.30	12.0
Carroll	62	-18	12.7	0.58	5.8
Cedar Falls†	42	-19	10.9	1.25	12.5
Cedar Rapids†	54	-14	14.8	1.56	11.4
Centerville†	65	-11	20.0	2.65	9.0
Charles City†	40	-20	8.5	1.25	10.5
Clarinda†	67	-14	17.6	0.30	6.0
Clinton	49	-17	14.0	1.89	16.5
College Springs[f]	67	-13	22.5	0.40	4.0
Corning†	66	-15	18.2	0.30	3.0
Cresco†	38	-20	6.9	0.87	9.0
Davenport	......	......	......	......	10.4
Decorah†	37	-22	7.4	1.45	14.5
Delaware*[3]	......	-21	8.8	0.72	8.8
Des Moines	......	......	......	......	15.6
Dubuque	......	......	......	......	14.0
Elkader†	40	-31	9.4	1.37	18.0
Emmetsburg	38	-22	8.8	0.29	3.4
Fairfield†	60	-15	16.3	1.08	8.0
Fayette	43	-24	10.0	1.42	13.4
Forest City	41	-21	5.2	0.15	0.5
Fort Madison*†[1]	48	-12	22.4	0.74	18.7
Galva†	55	-15	13.6	0.14	......
Glenwood†	62	-18	18.2	0.61	5.0
Grand Meadow*[1]	37	-18	10.0	1.60	17.0
Greenfield†	64	-21	16.9	0.59	5.9
Grinnell	50[e]	-12[e]	11.6[e]	0.73	5.8
Grundy Center	46	-22	10.9	0.28	12.0
Hampton	43	-20	8.5	0.95	9.5
Hawkeye	......	......	......	1.80	18.5
Hopeville†	63	-13	17.0	0.30	......
Hopkinton*[5]	40	-16	13.3	1.50	11.5
Humboldt	......	......	......	0.10	1.0
Independence†	47	-20	11.0	0.96	9.7
Indianola†	63	-19	17.7	1.15	......
Iowa City†	48	-21	14.4	2.37	18.7
Iowa Falls†	47	-26	9.8	0.89	10.0
Jefferson†	65	-14	14.2	......	......
Keokuk	......	......	......	......	11.7
Keosauqua†	62	-15	18.4	1.00	10.0
Knoxville	61	-13	15.7	1.10	14.0
Larrabee†	40	-17	10.7	0.25	2.6
Le Claire†	......	......	......	1.24	......
Logan†	60	-16	16.0	0.40	4.0
Mason City†	39	-18	9.2	0.51	5.1
Maxon*[1]	64	-18	14.1	1.15	5.0
Mechanicsville	41	-15	13.1	1.70	16.9
Monticello*†[1]	45	-18	11.8	0.98	9.5
Mooar	42	-28	9.2	......	......
Mount Pleasant*[2]	50	......	16.6	0.25	2.5
Mount Vernon*[1]	47	-19	12.0	......	
Newton	58	-16	14.6	0.81	9.6
Ogden	64	-20	13.9	0.32	6.3
Osage*†[3]	......	-19	6.2	0.86	8.5
Osceola	59	-14	15.9	0.76	7.8
Oskaloosa†	62	-16	16.7	0.62	5.8
Ottumwa	64	-12	17.8	1.59	9.9
Ovid†	62	-14	17.9	0.94	7.7
Panama†	58	-13	15.6	0.17	0.2
Rock Rapids	37	-26	6.2	1.00	10.0
Iowa—Cont'd.					
Rockwell City	58	-20	10.4	0.48	1.7
Sac City†	56	-15	11.4	0.50	5.0
Seymour†	65	-12	18.7	0.60	7.0
Sibley	37	-21	8.5	0.63	6.5
Sioux City	......	......	......	......	1.1
Spirit Lake†	45	-22	7.3	0.60	6.0
Toledo*[1]	49	-20	12.9	1.10	11.0
Villisca†	68	-15	17.2	0.37	3.7
Vinton*[1]	41	-17	12.1	1.65	16.5
Washington†	54	-16	15.2	1.25	13.0
Waukee	61	-14	18.4	1.01	10.1
Williams*[1]	49	-21	9.0	1.10	12.8
Wilton Junction†	51	-20	14.1	0.82	15.5
Winterset†	64	-17	15.5	0.95	9.5
Kansas.					
Abilene†	71	-4	25.0	0.60	6.0
Achilles*[4c]	60	-8	18.7	0.37	3.8
Allison*†[2]	57	-2	20.8	0.31	3.0
Altoona*†[3]	67	-2	24.4	0.91	9.5
Atchison†	70	-11	22.6	0.96	3.8
Beloit†	......	......	......	0.30	3.0
Blaine*[1]	66	-14	20.6	0.52	5.0
Burlington†	70	-9	22.4	0.85	8.5
Coffeyville*[1]	80	-1	30.4	1.00	10.0
Colby†	56	-7	23.6	0.34	3.4
Coldwater†	68	-2	27.1	2.01	9.5
Collyer*[4]	60	2	22.4	0.17	1.8
Columbus†	73	-5	27.2	1.23	13.8
Concordia	......	......	......	......	5.1
Coolidge†	62	-3	26.4	0.40	4.0
Cunningham†	67	-5	26.4	1.06	10.0
Dodge City	......	......	......	......	5.8
Downs	......	......	......	0.36	4.0
Eldorado†	68	0	26.6	0.60	6.0
Elk City*[1]	75	-2	29.0	0.90	9.0
Ellinwood*[6]	62	-2	24.2	1.32	7.8
Emporia†	65	-4	27.2	0.60	6.0
Englewood	72	-7	28.2	0.40[a]	2.2
Eureka Ranch†	63	-6	24.0	0.95	5.0
Fort Riley†	70	-7	23.8	0.41	3.9
Frankfort†	71	-11	24.4	0.15	1.5
Garden City†	64	-4	26.4	0.33	1.1
Garfield	......	......	......	0.22	2.5
Gibson*[1]	60	-5	21.9	0.25	2.5
Girard*[1]	69	-7	25.7	1.14	14.0
Gove*†[1]	62	-2	24.1	0.25	2.5
Grainfield*[6]	65	-5	28.0	0.20	2.0
Grenola*[1]	74	-2	29.2	0.60	6.0
Grinnell*[3]	60	-2	22.0	......	5.2
Halstead	65	-4	25.0	0.37	3.2
Hays City†	63[d]	-9[d]	20.2[d]	0.30	3.0
Horton†	70	-7	22.3	0.25	3.0
Hutchinson†	70	-1	28.8	0.57	5.0
Independence†	75	-2	28.7	0.74	7.2
Iola†	67	-12	22.4	0.60	6.0
Jaqua†	65	-5	25.2	0.55	4.0
Johnson†	65	-2	28.8	0.43	4.0
Kiowa†	76	-7	29.4	0.70	2.0
Lakin†	57	0	28.2	0.40	4.0
Lawrence	73	-9	25.4	0.83	7.1
Lebo†	69	-4	25.6	0.72	7.1
Leoti	61	-5	25.2	1.00	10.0
Macksville†	67	-2	24.4	0.20	4.0
McPherson†	68	-5	23.4	0.30	T.
Manhattan *b*	72	-8	23.7	0.69	6.1
Manhattan *c**[1]	70	-7	22.0	0.57	6.0
Medicine Lodge	......	......	......	0.79	2.8
Minneapolis†	67	-10	23.0	0.35	3.5
Morland†	64	-6	24.6	0.46	3.1
Morton†	66	-7	30.0	0.65	6.5
Mount Hope*[1]	70	3	29.1	0.50	6.0
New England Ranch†	62	-17	22.5	0.06	2.0
Oberlin†	......	......	......	0.35	2.5
Olathe	65	-8	24.0	0.30	3.0
Oswego†	76	-11	26.7	1.61	13.0
Pleasant Dale†	65	-5	23.6	0.75	7.3
Quinter*[1]	45	1	23.6	0.40	4.0
Rome*†[1]	67	0	30.0	0.56	7.0
Salina†	50	-5	20.8	0.50	5.0
Sedan†	75	-2	29.4	0.56	4.5
Sharon Springs*[1]	60	3	29.0	0.80	8.0
Silver Lake	......	......	......	0.82	5.8
Topeka	......	......	......	......	5.0
Tribune	59[e]	-4[e]	24.8[e]	0.60	6.0
Wakefield*[1]	79	-6	25.4	0.54	5.8
Wallace *a*	......	......	......	0.56	7.8
Wamego*[1]	68	-8	22.6	0.70	7.0
Wellington*[1]	70	2	31.3	0.06	0.6
Wichita	......	......	......	......	6.0
Winfield*[5]	66	-4	28.2	0.49	4.5
Winona*[6]	58		21.5	0.42	4.2
Yates Center†	70	-6	25.0	0.74	12.0
Kentucky.					
Alpha*†[1]	61	-3	34.6	8.80	18.0
Blandville†	67	-4	30.3	5.11	18.5
Bowling Green *a**†[1]	60	-8	30.1	5.83	10.0
Bowling Green *b*†	62	-7	32.6	5.28	9.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kentucky—Cont'd.	°	°	°	*Ins.*	*Ins.*
Burnside †	......	......	......	7.47	5.0
Caddo †	64	−13	29.8	5.60	......
Canton *†[1]	65	0	33.2	6.53	11.5
Carrollton †	......	−10	......	3.95	......
Catlettsburg *†[5]	55	− 3	30.0	4.91	11.0
Cromwell *[1]	58	−16	31.3	1.32	4.6
Earlington	65	− 4	31.4	6.70	22.0
Eddyville †	......	......	......	5.17	12.5
Edmonton †	61	− 8	31.8	5.57	15.0
Eubank †	59	−14	29.3	6.27	14.8
Falmouth †	......	......	......	5.62	6.0
Fords Ferry †	65	− 4	30.6	4.54	11.0
Franklin *†[1]	60	− 7	34.7	6.90	18.5
Georgetown	60	−14	28.2	......	......
Greendale *[1]	57	−14	27.3	5.27	13.0
Greensburg *†[1]	60	− 8	31.1	6.73	14.0
Henderson †	64	0	30.9	5.34	13.0
Hendricks	80	− 5	31.4	5.77	12.2
Herbert	62	−10	30.2	2.16	10.3
Lexington	......	......	......	......	14.8
Louisa †	......	......	......	6.61	......
Louisville	......	......	......	......	20.5
Marrowbone †	60	− 6	33.4	6.19	14.5
Matlock	56	− 6	29.9	5.90	22.0
Mount Sterling †	57	−10	27.4	6.23	12.0
Munfordville *†[1]	61	−10	31.5	5.93	......
Paducah *a* †	......	......	......	5.28	14.5
Paducah *b* †	67	− 3	31.5	5.11	16.0
Pleasure Ridge Park	62	−14	28.2	4.02	17.6
Princeton †	65	− 6	27.7	......	9.5
Richmond †	58	−13	28.0	2.30	13.0
Russellville †	78	− 4	32.8	5.78	13.5
Sandy Hook †	59	−11	32.6	5.14	13.0
Shelby City *[1]	56	− 8	30.1	6.86	17.0
Shelbyville †	60	−12	32.3	4.41	13.4
South Fork †[2]	......	......	30.1	7.75	15.0
Springfield †	63	−10	30.2	8.30	14.0
Louisiana.					
Abbeville	80	25	52.1	3.15	
Alexandria †	87	20	52.0	4.47	
Amite †	79	20	50.2	6.42	
Bastrop †	80	16	45.0	5.20	T.
Baton Rouge †	82	23	51.2	3.73	
Calhoun †	75	16	42.6	4.89	1.5
Cameron †	81	23	52.4	1.80	
Cinclare	84	22	50.2	3.41	
Clinton †	79	20	49.8	2.57	
Coushatta *a* †	......	......	......	2.94	T.
Coushatta *b* †	78	15	46.2	3.39	T.
Covington †	75	20	48.6	7.86	T.
Davis	77	16	43.7	3.15	
Delhi †	......	......	......	4.06	0.2
Donaldsonvile †	81	25	51.6	6.83	
Emile †	75	25	50.6	8.35	
Farmerville	77	14	43.7	4.57	1.5
Franklin †	79	26	53.2	5.90	
Girard	......	......	......	2.18	
Grand Coteau	77	27	52.5	3.23	
Hammond †	......	......	......	5.59	
Houma †	77	27*	56.8	4.30	
Jeanerette †	79	25	54.0	3.95	
Lafayette	80	24	51.6	1.83	
Lake Charles[g]	78	30	57.2	1.50	
Lawrence †	76	29	51.2	2.67	
Liberty Hill	78	15	45.1	3.63	4.0
Maurepas	80	23	50.2	5.91	T.
Melville †	86	20	49.0	4.05	
Monroe †	76	17	46.2	4.05	3.0
Natchitoches †	78	18	45.8	3.30	T.
New Iberia	77	26	52.6	3.10	
Opelousas †	81	21	52.4	2.72	
Oxford †	86	14	45.3	2.74	2.0
Paincourtville	......	......	......	6.30	
Plain Dealing †	75	14	41.6	4.99	T.
Rayne †	80	24	54.2	2.15	
Schriever †	80	22	54.4	5.75	
Shell Beach	76	25	52.8	1.94	
Shreveport	......	......	......	......	0.9
Southern University †	78	25	53.0	9.45	
Sugar Ex. Station †	77	26	50.8	8.58	
Sugartown †	75	14	49.3	4.34	
Thibodeaux	......	......	......	5.01	
Wallace	80	25	52.0	4.78	
West End	......	......	......	9.37	
Maine.					
Belfast *[6]	42	− 3	21.0	6.53	22.0
Calais †	44	− 8	21.0	5.68	27.0
Cornish *[1]	40	− 5	20.0	1.78	17.0
Easton †	38	−19	17.0	2.30	......
Eastport	......	......	......	......	12.2
Fairfield	42	−12	18.4	2.23	19.8
Farmington †	51	−16	17.0	4.05	19.0
Gardiner	46	−15	18.2	2.50	13.2
Houlton †	40	−26	11.9	2.55	19.5
Indian Stream	36	−20	12.8	2.31	17.5
Kineo	35	−16	13.8	2.11	10.0
Lewiston	40	−15	20.6	3.41	17.6

Stations.	Temperature (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Maine—Cont'd.	°	°	°	*Ins.*	*Ins.*
Madison *[1]	38	−14	18.0	......	16.5
North Bridgton	40	− 9	17.4	1.92	17.0
Petit Menan *[4]	42	2	25.9	......	......
Portland	......	......	......	......	11.2
West Jonesport [1]*	43	4	23.9	......	......
Maryland.					
Annapolis	54	11	30.0	......	......
Bachmans Valley *[1]	46	5	26.0	4.18	9.0
Baltimore	......	......	......	......	5.0
Bel Alton	54	9	34.3	5.05	......
Boettcherville *[1]	44	− 6	26.2	4.20	20.0
Burkittsville	49[f]	0[f]	26.3[f]	4.34	14.4
Charlotte Hall †	62	10	32.8	3.62	14.0
Cherryfields †[2]	......	......	33.2	2.78	11.0
Chestertown †	57	11	30.6	4.20	4.0
College Park	49[m]	10[m]	29.4[m]	3.79	7.0
Cumberland *a* †	42	− 3	26.0	3.53	14.5
Cumberland *b*[2]	......	− 4[d]	27.8	3.38	16.5
Darlington †	50	8	28.6	5.29	5.0
Deer Park	50	−15	21.4	......	......
Denton †	61	13	33.2	3.58	9.5
Easton †	61	11	35.2	4.60	9.0
Fallston *[1]	50	10	29.2	4.64	6.2
Frederick *a*	45	2	28.5	3.54	8.5
Frederick *b*	45	3	28.8	......	......
Glyndon	49	3	26.2	5.10	18.0
Grantsville	53	−14	22.8	5.42	24.5
Great Falls *[5]	55	6	30.0	3.66	......
Hancock	47[l]	− 3[l]	25.7[l]	1.33[l]	......
Jewell †	61	13	33.4	5.09	14.0
Johns Hopkins Hospital	60	7	30.4	......	......
La Plata †	64	10	33.2	6.00	......
McDonogh *	52	9	30.0	......	......
Mardela Springs †	62	10	33.0	4.14	14.0
Mt. St. Marys College †[1]	46[e]	− 1	27.2[e]	1.87	6.8
Oakland †	52	−12	21.6	9.89	58.0
Pocomoke City	66	16	37.4	4.84	4.0
Popes Creek	59	6	32.2	2.60	......
Princess Anne	62	12	34.3	3.42	6.0
Sharpsburg	44	0	26.2	4.17	10.9
Solomons †	60	12	34.7	3.40	16.0
Sunnyside	56	−17	22.4	5.48	27.5
Upper Marlboro †	63	8	30.6	5.43	15.5
Western Port	48	− 8	24.4	2.45	16.0
Westminster[k]	56	2	29.5	1.97	......
Woodstock	51	3	28.0	3.85	19.5
Massachusetts.					
Adams	50	0	23.8	......	22.0
Amherst	46	− 3	22.5	3.24	......
Amherst Ex. Station *a*	45	− 6	19.6	3.65	21.5
Amherst Ex. Station *b*	46	− 4	23.2	3.87	21.8
Andover	44	− 1	24.6	4.11	19.0
Ashland	......	......	......	4.24	......
Bedford	47	− 4	22.7	3.50	18.0
Beverly Farms	46	0	25.5	4.52	14.0
Blue Hill (summit)	50	1	25.5	4.08	16.0
Blue Hill (valley)	49	− 6	24.6	4.13	......
Boston (V. O.)	......	......	......	3.38	......
Boston (W. B.)	......	......	......	......	13.9
Brockton *a*	55	6	27.7	3.46	10.6
Brockton *b*	......	......	......	3.94	......
Brockton *c*	......	......	......	3.90	......
Cambridge *a*	50	1	26.1	3.85	......
Cambridge *b*	48	2	25.8	3.57	......
Chestnut Hill	50	2	26.4	3.91	15.2
Clinton	......	......	......	3.15	......
Concord †	48	− 6	22.2	3.25	17.4
Dudley	46	− 3	21.6	4.57	9.5
East Templeton *[1]	44	− 5	21.8	3.77	16.5
Egg Rock, Nahant	49	3	26.8	......	......
Fall River	58	6	29.4	3.84	10.5
Fiskdale	......	......	......	2.80	12.0
Fitchburg *a* *[1]	44	0	22.5	3.32	16.5
Fitchburg *b*	45	− 1	22.2	3.75	18.2
Framingham	49	− 4	23.4	3.88	......
Gilbertville[4]	48	− 3	22.6	......	......
Groton	44	− 5	21.7	3.47	21.5
Hadley	46	−12	14.6	......	......
Hingham	......	......	......	3.23	9.5
Hobbs Brook	......	......	......	3.51	11.2
Hyannis	52	8	32.2	3.08	7.8
Lake Cochituate	51	−11	22.9	3.93	......
Lawrence	45	− 3	21.9	2.26	18.0
Leeds	47	− 7	21.9	3.38	15.2
Leominster *[6]	45	− 1	22.9	3.36	16.2
Long Plain *[6]	53	2	27.1	3.58	4.0
Lowell *a*	46	− 5	22.2	3.30	......
Lowell *b*	48	− 6	21.9	......	......
Lowell *c*	50	1	25.8	......	......
Ludlow Center	42	− 8	18.9	2.10	14.2
Lynn *a*	46	0	28.2	3.72	......
Lynn *b*	47	3	26.6	......	......
Mansfield *[1]	51	1	25.7	5.81	15.5
Middleboro	53	− 1	26.6	2.99	11.2
Milton	50	3	28.0	3.95	12.5
Monroe	46	− 9	17.1	3.94	35.0
Monson	50	− 6	23.7	2.66	8.0

Stations.	Temperature (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Massachusetts—Cont'd.	°	°	°	*Ins.*	*Ins.*
Mount Nonotuck	......	......	......	3.96	17.2
Mystic Lake	......	......	......	3.84	......
Mystic Station	......	......	......	3.62	......
Nantucket	......	......	......	......	6.3
Natick *[1]	47	− 1	23.6	4.51	12.0
New Bedford *a*	50	4	28.2	4.04	11.5
New Bedford *b*	52	5	28.5	3.95	7.0
North Billerica	48	2	26.0	2.90	20.0
Pittsfield	45	− 5	20.2	2.29	......
Plymouth *[1]	52	6	30.7	3.02	7.0
Provincetown	51	10	30.1	3.08	9.0
Roberts Dam	......	......	......	4.08	8.5
Roxbury	50	4	28.4	3.93	12.5
Salem	......	......	......	3.84	17.8
Salisbury	......	......	......	2.76	14.0
Somerset *[1]	55	4	29.8	3.93	17.0
Springfield Armory	50	6	25.4	3.69	21.0
Taunton *b*	55	4	27.9	3.89	10.0
Taunton *c*	56	0	27.1	4.24	......
Taunton *d*	56	1	27.4	3.96	8.0
Turners Falls	42	− 9	21.1	3.26	......
Wakefield †	46	− 1	24.7	4.18	17.0
Waltham	......	......	......	4.08	......
Webster	......	......	......	4.06	19.8
Wellesley	56	− 5	24.2	3.99	......
Vineyard Haven	......	......	......	......	7.6
Westboro †	48	− 4	25.8	3.79	18.0
Williamstown	45	−10	20.9	1.87	15.2
Winchendon	......	......	......	2.90	19.0
Winchester	......	......	......	3.23	......
Winthrop	49	2	28.0	4.45	6.0
Woods Holl	......	......	......	......	10.6
Worcester *a*	46	0[e]	23.8[e]	3.19	......
Worcester *b*	47	1	25.0	2.12	14.0
Worcester *c* *[1]	48	− 1	23.0	......	......
Michigan.					
Adrian	43	−10	18.6	2.46	17.8
Albion	42	− 2	19.3	4.13	21.1
Allegan	48	− 9	18.4	3.36	32.0
Alma	49	− 8	16.2	2.33	26.0
Alpena	......	......	......	......	23.2
Ann Arbor	47	− 6	18.2	1.98	16.0
Arbela *[3]	......	− 5	15.4	3.65	23.0
Ball Mountain	45	− 6	17.8	2.13	20.7
Bear Lake[f]	35	− 5	20.8	......	......
Benzonia	42	2	17.4	5.90	57.5
Berlin *[1]	45	−12	16.5	3.37	28.4
Berrien Springs *[1]	49	− 8	20.6	5.80	48.0
Birmingham	47	− 9	19.4	2.19	14.5
Boon	37[e]	− 8[e]	14.1[e]	3.07	26.4
Bronson	43	−10	16.0	2.30	19.0
Brown City[h]	46	− 7	16.8	3.50	33.5
Calumet	34	− 4	13.6	5.48	77.0
Charlevoix	36	3	18.2	3.15	21.5
Cheboygan	42	−14	14.6	2.10	35.5
Clinton	48	− 9	17.1	2.53	16.5
Detroit	......	......	......	......	21.5
Escanaba †	41	−12	18.4	1.99	......
Fairview	46	− 8	17.1	1.96	19.0
Fitchburg	48	− 8	17.5	2.94	27.5
Flint	46	− 6	16.2	1.15	6.2
Frankfort *[10]	48	10	25.0	......	
Gladwin	43	−14	15.9	2.85	28.5
Grand Haven	......	......	......	......	29.9
Grand Point au Sable	38	2	19.5	......	......
Grand Rapids	48	− 1	19.3	4.42	37.5
Grape	50	− 6	19.2	1.29	19.0
Grayling	34	− 8	13.6	4.10	36.0
Hanover	54	− 8	21.4	2.18	19.0
Harrison	33[i]	−11	13.8[e]	0.93	9.0
Harrisville	40	− 9	16.0	4.42	38.0
Hart	42	− 4	18.8	3.80	20.0
Hayes	36	−10	17.8	4.23	39.5
Hesperia	45	−13	13.6	1.52	15.2
Highland Station	45	− 7	16.9	2.41	19.0
Holland *[9]	49	− 3	22.0	......	......
Howell	45	− 9	16.8	2.30	19.2
Ivan	43	− 9	16.0	3.09	43.0
Jeddo	44	− 7	18.2	2.61	24.0
Kalamazoo	47	−10	18.7	3.44	29.2
Lansing	47	− 6	17.3	2.66	21.5
Lathrop *[1]	34	−17	11.4	4.33	41.8
Lewiston	43	− 6	15.7	1.06	......
Ludington *[9]	40	10	23.1	......	
Madison	47	− 7	17.9	2.49	18.1
Marquette	......	......	......	......	49.5
Mayville	45	− 6	18.4	3.05	24.5
Middle Island *[10]	40	4	21.6	......	......
Mottville	50	−14	17.4	1.82	18.2
N. Manitou Island *[10]	38	0	20.8	......	
North Marshall	47	−12	16.0	1.54	8.5
Northport	44	0	21.7	4.10	39.0
Old Mission	48	2	20.8	2.80	21.0
Ovid	47	− 7	17.6	2.37	17.0
Paris	45	−17	18.0	3.13	21.0
Parkville	......	......	......	2.77	21.0
Point aux Barques *[10]	41	0	19.9	......	......

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
Michigan—Cont'd.					
Point Betsy*[9]	42	8	22.2		
Pontiac	48	−6	19.2		
Port Huron					20.0
Rockland	41	−16	12.8	2.50	16.5
Romeo	46	−9	18.3		
St. Ignace	41	−13	15.0	2.82	25.5
St. Johns	47	−8	18.6	2.20	14.0
Sand Beach *a*	43	−5	19.4		
Sault Ste. Marie					25.0
Stanton	45	−10	16.4	1.80	18.0
Thornville	42	−4	18.0	2.89	26.0
Thunder Bay Island*[10]	36	6	19.8		
Vandalia	50	−12	18.9	3.50	31.7
Ysilanti	47	−12	17.8	2.07	16.9
Minnesota.					
Ada	27	−38	2.6	0.45	7.7
Alexandria *a* †				1.13	11.3
Beardsley †	29	−33	1.5	0.99	10.0
Belle Plaine*[1]	30	−24	8.4		
Bingham Lake †	35	−22	5.5	0.33	3.3
Bird Island	32	−23	4.2	0.37	3.8
Blooming Prairie*[1]	35	−18	6.6	0.50	5.0
Bonniwells Mills †	30	−23	4.0	0.33	4.5
Caledonia †	38	−22	7.4	1.05	10.2
Cambridge †	34	−30	−4.6	0.44	2.5
Camden †	35	−22	5.5	0.21	2.0
Campbell	27	−32	−1.1	0.34	3.4
Clear Lake †	23	−31	0.0	0.54	T.
Clear Water*[1]	33	−24	5.3	0.82	8.2
Collegeville	30	−23	5.7	0.50	4.8
Crookston †	32	−37	−4.4	0.30	3.0
Dawson*[1]	35	−24	5.0	0.41	4.1
Duluth					8.4
Farmington †	32	−26	3.3	1.70	17.0
Fergus Falls †	28	−28	1.4	0.40	4.0
Fort Ripley †				0.69	7.0
Grand Meadow †	37	−29	3.5	0.56	9.0
Granite Falls	32	−24	3.2	0.17	2.0
Hutchinson †	31	−30	2.2	0.75	7.5
Jadis[4]	30	−35	−6.3	0.73	10.5
Lake Winnibigoshish*[1]	26	−30	0.7	0.31	3.9
Lawrence	32	−24	3.8	0.75	7.5
Leech Lake*[1]	30	−38	−5.0	0.20	3.2
Little Falls				0.40	4.0
Long Prairie †	27	−30	−1.4	0.42	6.6
Luverne †	36	−26	6.7	0.90	9.0
Maple Plain	32	−27	4.1	1.09	10.8
Marfield †	30	−34	0.4	0.75	7.5
Mazeppa*[1]	32	−20	4.8	0.80	5.0
Milan †	34	−27	2.0	0.44	4.9
Minneapolis *a* †	32	−25	4.7	1.08	10.8
Minneapolis *b*[1]	32*	−23	5.0	0.92	11.0
Minnesota City †	36	−22	9.0	0.91	13.0
Montevideo †	36	−24	2.2	0.50	3.6
Moorhead					3.7
Morris †	28	−27	1.4	0.40	4.2
New London	29	−26	2.4	0.67	2.5
New Ulm	38	−26	8.4	0.27	3.8
Park Rapids †	30	−37	−1.2	0.36	3.6
Pine River*[1]	30	−35	0.7	0.24	3.2
Pleasant Mounds*[1]	36	−24	5.4	0.40	4.0
Pokegama Falls[1]	29*	−42	−1.7	0.61	4.3
Red Lake †	34*	−32*	−2.2*	0.91	8.3
Redwood Falls †				0.20	2.0
Rolling Green †	35	−21	4.8	0.65	6.5
St. Charles †	37	−22	6.1	1.00	9.5
St. Cloud	34	−30	3.2	0.48	6.0
St. Olaf	27*	−26*	0.9*	0.40	5.2
St. Paul †					11.9
St. Peter	36	−23	7.4	0.52	5.2
St. Vincent					7.7
Sandy Lake Dam[1]	27*	−41	2.3	0.58	6.1
Sauk Center	28	−26	1.0	0.60	6.0
Sunrise City*[6]	32	−26	2.7	0.85	8.5
Two Harbors †	34	−25	8.7	0.53	4.2
Wabasha*[1]	34	−23	7.1	1.50	15.0
Willmar †	30	−25	6.7	0.65	6.5
Winona	35	−15	9.5	0.92	8.1
Worthington	34	−22	5.6	0.84	8.4
Mississippi.					
Agricultural College	73	14	41.2	8.68	2.0
Batesville †	72	7	41.5	6.00	6.0
Bay St. Louis †	71	24	48.1	4.52	
Biloxi †	78	23	49.4	5.89	T.
Briers	74	21	46.4	3.22	
Brookhaven †	78	14	47.1	6.51	4.0
Canton	73	10	45.0	7.69	3.5
Clarksdale				7.40	
Columbus †	79	7	43.2	8.57	
Corinth †	62	9	37.3	4.45	
Crystal Springs †	76	15	44.4	5.30	
Duck Hill †	74	14	41.6	6.58	2.8
Edwards	71	17	44.0	5.52	2.0
Egypt*[1]	68	10	36.6		
Enterprise †	75	14	45.6	5.59	T.
Fayette †	75	20	48.2	3.36	T.
French Camps †	74	3	39.8	7.58	5.5

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
Mississippi—Cont'd.					
Fulton †	72	2	41.4	6.10	6.0
Greenville *a*	73	16	42.3	6.33	1.0
Greenville *b* †	76	15	42.0	6.32	1.0
Hattiesburg	75	19	47.6	6.79	T.
Hernando †	72	12	38.0	4.60	
Holly Springs †	68	9	38.3	6.08	5.3
Jackson †	74	16	45.7	6.13	5.2
Kosciusko †	74	14	43.0	7.59	4.0
Lake †[4]	72	15	43.9	2.89	2.0
Leaf*[1]	72	21	47.2		
Leakesville †	81	20	50.0	7.18	0.3
Logtown †	73	24	51.0	5.58	
Louisville †	75	8	41.4	7.12	3.0
Macon †	72	16	44.4	6.55	1.0
Meridian					0.3
Moss Point †	71	23	50.9	6.98	T.
Natchez †	80	20	47.8	4.35	
Okolona †	72	3	40.8	5.79	
Palo Alto †	73	6	40.8	10.92	10.2
Pontotoc †	76	12	41.7	5.51	5.5
Port Gibson	77	18	45.2	4.49	T.
Rosedale †	73	6	40.9	6.56	T.
Stonington*[1]	78	20	47.6		
Thornton*†[3]	75	22	47.0	5.77	2.0
Topton*[3]	74	20	45.9	7.55	0.5
University †	69	9	39.4	5.67	6.4
Vaiden †	78	7	43.7	7.49	4.2
Vicksburg					0.5
Water Valley*[1]	76	8	41.4	6.07	2.6
Waynesboro *a* †	70	21	41.9	7.80	
Woodville †	78	20	49.0	5.52	
Yazoo City †	74	11	45.2	6.26	
Missouri.					
Appleton City †	70	−8	26.8	1.10	11.0
Arthur*†[3]		−10	22.1	0.90	9.0
Bagnell †				2.30	15.0
Bethany	66	−12	19.4	0.84	5.0
Birch Tree	65	−4	30.0	2.10	9.5
Bluffton*[1]	70	−5	28.6	0.89	7.0
Boonville †				1.39	6.0
Brunswick	64	−12	21.8	1.05	6.0
Carrollton †	64	−6	24.3	0.60	5.0
Carthage				1.23	10.0
Columbia					9.9
Conception	61	−11	21.2	0.30	3.0
Cowgill*[5]	64	−10	23.1	0.40	4.0
Darksville †	61	−10	25.2	1.02	7.8
Dixon †	64	−6	25.6	1.70	10.5
Downing				0.65	6.5
East Lynne*[3]		−8	20.8	0.97	9.1
Edgehill*[5]	64	−4	30.6	2.51	8.0
Eight Mile*[1]	64	−9	24.0	1.18	11.4
Eldon*[1]	70	−4	26.0	1.08	10.5
Elmira	67	−19	21.4	0.85	6.5
Emma*[3]		−6	23.4	0.60	6.0
Fairport				0.90	4.0
Farmersville				0.92	6.2
Fayette	65	−10	23.4	1.03	8.6
Fox Creek*[1]	69	−6	25.2	1.50	11.0
Fulton				1.00	10.0
Gallatin*[1]	66	−10	21.2	0.93	6.0
Gayoso*[3]		−2	31.2	5.82	7.0
Glasgow	66	−10	23.2	0.85	8.0
Glensted				2.81	12.0
Gordonville*[3]		−4	28.6	3.51	12.0
Gorin*[3]		−7	19.7	1.21	10.5
Grove Dale				1.80	14.7
Half Way	70	−7	27.2	1.60	12.5
Hannibal					15.4
Harrisonville †	69	−9	22.8	0.72	8.0
Hastain	69	−11	24.8	1.97	15.5
Hermann †				1.21	10.0
Houston	60	−8	26.0	1.58	10.0
Houstonia (near)				1.64	10.4
Humansville	70	−8	25.8	1.09	10.9
Ironton*†[1]	62	−3	27.9	2.60	9.5
Jefferson City †	70	−4	27.4	1.70	11.0
Kansas City					3.3
Kidder	63	−11	21.4	1.15	7.4
Lamar	71	−6	27.6	1.55	15.5
Lamonte				0.90	9.0
Langdon	70	−12	20.0	0.17	2.0
Lebanon	70	−7	29.6	1.85	11.4
Lexington	64	−8	24.4	0.73	7.0
Liberty	66	−7	23.6	0.41	3.5
Linn Creek	69	−8	27.6	1.30	8.0
Louisiana Bridge †				1.30	12.0
McCune*†[1]	64	−22	20.5	0.85	10.5
Marble Hill		−4		1.98	11.0
Marceline				1.38	10.0
Marshall †	65	−8	22.2	1.15	11.0
Maryville*[4]	66	−12	16.6	0.41	4.1
Mexico †	66	−9	21.2	1.06	9.7
Miami	68	−4	32.0	1.35	7.2
Mine La Motte †	63	−4	28.9	2.26	10.5
Mount Vernon	74	−9	27.2	2.01	12.5
Nevada				1.17	11.5

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	Ins.	Ins.
Missouri—Cont'd.					
New Hartford*[1]	70	−8	24.0	1.65	8.0
New Haven*[1]	65	−2	25.8	1.40	14.0
New Madrid	66	2	34.7	4.81	10.0
New Palestine				1.12	11.0
Oakfield †	67	−7	25.6	1.58	9.2
Oak Ridge*[4]		−4	29.6	3.30	18.0
Olden †	64	−4	32.4	1.76	8.4
Oregon *a*	70	−12	22.3	0.93	6.3
Oregon *b*	67	−13	21.0	0.83	6.6
Osceola †				1.65	14.0
Oto				1.95	13.3
Palmyra				1.52	12.8
Panacea	75	−5	31.5	2.15	11.5
Pickering*[3]		−18	17.7	0.53	5.8
Platte River*[3]	64	−6	20.6	0.85	5.5
Poplar Bluff	68	−1	34.5	3.08	7.0
Potosi	63	−8	25.6	2.35	14.0
Princeton*[1]	62	−12	20.8	1.40	7.0
St. Charles	67	−8	24.5	1.30	6.1
St. Joseph †				0.52	2.8
St. Louis		−6	23.9		
St. Louis (W. B.)					8.1
Sarcoxie*[3]	78	−6	26.4	2.07	14.3
Shelbina				1.00	12.0
Sikeston	62*	−5*	31.6*	3.07	12.5
Springfield					16.0
Steffenville				1.50	14.5
Stellada †	70	−15	27.0	0.97	9.5
Sublett	63	−17	18.5	1.07	10.5
Tindall †				1.36	9.0
Unionville †	68	−13	17.8	1.25	9.2
Vera Cruz				2.27	10.2
Vermont*†[1]	67	−7	23.5	1.67	11.7
Vilas				0.45	4.5
Virgil City				0.75	7.5
Warrensburg*[1]	70	−5	25.6	0.85	8.2
Warrenton	68	−8	25.4	1.19	5.0
Wheatland				1.58	14.3
Montana.					
Billings †	51	−32	17.2	1.95	19.5
Boulder †	47	−21	17.2	0.49	
Bozeman †	46	−19	19.6	1.33	13.3
Butte †	46	−20	18.4	0.93	13.5
Cascade †				1.52	19.2
Cataract District	48	−29	13.6	3.32	33.2
Choteau †	54	−22	14.0	1.61	16.0
Cokedale*[4]	46	−20	18.6	2.70	27.0
Columbia Falls †	43	−20	20.4	2.05	22.5
Deer Lodge City †	57	−33	18.0	2.06	21.5
Fort Benton †	72	−32	22.9		
Fort Custer †	44	−30	9.8	1.67	17.0
Fort Keogh †	47	−30	8.6	0.78	7.8
Fort Logan †	46	−24	15.0	0.32	10.0
Fort Missoula	45	−19	16.4	1.54	17.8
Glasgow †	41	−33	0.2	0.84	4.4
Glendive †	38	−20	4.6	0.60	5.0
Great Falls †	60	−22	19.8	0.74	12.2
Havre					10.7
Helena					19.5
Hogan †	50	−19	16.9	1.62	16.0
Kipp †	47	−35	10.0	1.16	11.5
Martinsdale †	50	−23	18.2	1.62	14.6
Marysville †	50	−13	18.4	1.54	15.5
Miles City					6.4
Mingusville †	52	−26	10.4	0.77	5.7
Pony †	49	−18	21.0	0.60	6.5
Radersburg †				0.53	5.2
Red Lodge	49	−20	19.8	1.65	16.5
Troy †	44			2.59	8.7
Utica †	53	−20	18.8		
Virginia City †	45	−15	19.0	0.99	11.5
White Sulphur Springs †	48	−20	18.4	0.51	4.1
Nebraska.					
Agee*[1]	58	−21	12.0	0.40	2.0
Albion †	58	−15	15.8	0.32	3.2
Ansley †	56	−16	18.0	0.05	0.5
Arborville*[1]	50	−12	17.5	0.20	2.0
Arcadia	59[1]	−9[1]	25.2[1]		
Ashland *a* †	62	−14	17.9	0.14	1.2
Ashland *b*[*1]	60	−13	19.4	0.05	1.8
Auburn*†[1]	68	−14	20.7	0.33	3.0
Aurora*[1]	63	−10	19.4		
Bassett	57	−21	13.8	0.50	5.0
Beatrice †	64	−11	19.7	T.	T.
Beaver City	63	−5	24.4	0.28	3.0
Benkelman*[1]	60	−8	25.2	0.55	5.5
Blue Hill*[1]	60	−10	22.5	0.10	1.0
Bratton*[1]	66	−12	19.2	0.49	4.0
Broken Bow*[1]	52	−8	19.4	0.05	0.5
Burchard*[1]	60	−12	21.1	0.40	4.0
Burwell*[1]	46	−14	19.3	0.42	4.2
Callaway †	58	−12	22.9	0.30	3.0
Central City*[5]	62	−10	19.5	0.10	
Chadron*[1]	60	−14	19.8	0.77	8.8
Chester*[1]	63	−12	19.6	0.13	
Columbus †	65	−14	19.3	0.15	2.0
Cornlea				0.16	2.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nebraska—Cont'd.	°	°	°	Ins.	Ins.
Cortland *[1]	63	−12	17.6	T.	T.
Creighton †	41	−17	11.2	0.10	1.0
Crete	64	−16	19.0	0.37	3.2
Culbertson	......	......	......	0.55	5.5
Curtis *a* *†[5]	58	−16	24.8	0.30	3.0
Curtis *b* *[1]	70	−18	22.0	0.13	1.3
David City *†[1]	55	−15	13.8	0.25	3.0
Dunning *[1]	52	−10	22.0	0.06	0.6
Edgar *[1]	60	−14	18.6	0.03	0.3
Ericson *†[1]	50	−20	15.8	0.40	4.0
Ewing †	......	......	......	0.14	0.2
Fairmont *[1]	58	−13	18.4	T.	T.
Fontanelle	57	−14	16.1	0.44	2.8
Fort Robinson	58	−15	22.4	0.61	6.1
Franklin †	64	− 6	23.2	0.30	3.0
Geneva †	60	−12	19.0	0.20	2.0
Genoa †	55	−14	16.3	0.19	2.0
Gering †	50	−14	23.3	0.75	7.5
Gibbon	61	− 8	20.4	0.40	......
Glenwood *[3]	56	−17	10.4	0.30	3.0
Gothenburg	56	− 5	24.4	0.22	5.0
Grand Island *[1]	72	− 8	22.0	0.25	2.5
Greeley Center *[1]	54	−13	17.5	T.	T.
Hartington †	45	−17	12.9	0.65	4.5
Harvard *[1]	58	−10	17.5	0.15	1.5
Hastings *[1]	56	−11	17.3	0.23	1.5
Hayes Center	......	......	......	0.62	6.2
Hay Springs †	48	−16	17.0	1.00	10.0
Hebron †	66	−11	20.0	0.20	2.0
Hickman *[1]	68	−12	19.9	0.06	0.5
Holdredge *b* *[1]	58	− 4	20.7	0.30	3.0
Imperial *a* †	58	−17	20.0	0.23	2.3
Indianola *[5]	60	− 6	24.0	0.20	2.0
Kearney *[1]	60	− 2	22.9	0.20	2.0
Kennedy *†[1]	56	− 7	20.7	0.15	1.5
Kimball †	62	−13	24.0	0.95	9.0
Lexington †	60	−18	20.9	1.20	11.0
Lodge Pole †	58	−16	21.8	0.70	7.0
Loup *a* *[1]	54	−13	17.8	0.10	1.0
Loup *b* *[5]	56	−12	18.3	T.	T.
Lynch *†[1]	55	−22	15.7	0.15	2.6
McCook *[1]	56	− 4	25.6	0.60	6.0
Madison	......	......	......	0.43	3.5
Madrid *†[5]	50	−17	20.6	0.70	7.0
Marquette *	60	−10	......	0.47	4.5
Minden *[1]	64	− 9	16.9	0.41	2.4
Mullen *[1]	44	−10	18.4	......	......
Nebraska City *a* *†[1]	61	−14	15.8	0.15	1.5
Nebraska City *b* *[1]	66	−10	20.2	0.33	3.3
Nemaha City *[1]	68	−12	19.9	0.40	4.0
Norfolk †	47	−17	15.5	0.20	2.0
North Loup *†[1]	56	−13	17.2	......	......
North Platte	......	......	......	......	3.3
Oakdale †	51	−17	13.1	0.20	2.0
Odell *[5]	64	−12	19.7	0.20	2.0
Omaha *[1]	52	−17	16.8	0.30	3.0
Omaha (W. B.)	......	......	......	......	3.5
O'Neill *[1]	54	−18	13.1	0.25	2.5
Ough †	......	......	......	0.40	4.0
Palmer *a* *[1]	56	−16	14.2	0.30	3.0
Palmer *b*	......	......	......	0.20	2.0
Plattsmouth *a* †	......	......	......	0.50	5.0
Plattsmouth *b* *[1]	69	−10	20.4	0.35	3.5
Ravenna *a*	61	−11	19.4	0.31	2.2
Ravenna *b* *[1]	60	− 5	23.7	0.20	2.0
Red Cloud *a*	......	......	......	0.32	3.0
Red Cloud *b* *[1]	59	− 7	20.7	0.25	2.5
Republican *[1]	50	− 9	21.3	......	......
Rulo *[1]	72	− 9	24.6	0.55	5.5
Salem *[1]	66	− 9	22.0	0.72	7.2
Santee Agency †	50	−17	13.9	0.36	3.6
Seneca *[1]	58	−12	20.6	0.20	2.0
Seward *[3]	55	−13	17.6	0.20	2.0
Spencer (near) *[1]	54	−20	16.0	0.50	5.0
Springview	51	−15	15.6	0.21	1.6
Stanton *[1]	52	−16	13.3	0.12	0.8
State Farm	68	−12	21.5	......	......
Strang *[1]	60	−12	23.2	0.01	0.1
Superior *[5]	53	− 8	22.6	0.15	0.5
Sutton	59	−10	18.1	0.06	1.0
Syracuse	......	......	......	0.01	0.1
Tecumseh †	66	−11	19.4	0.00	0
Tekamah	59	−18	16.0	0.39	4.0
Turlington †	65	−14	18.1	0.35	3.5
Wakefield	......	......	......	0.16	1.6
Wallace *[1]	50	−15	21.6	0.80	8.0
Weeping Water *[1]	60	−16	15.1	0.71	7.1
West Point †	......	......	......	0.04	0.5
Whitman *[1]	52	−18	17.7	0.02	0.2
Wilber *[1]	66	−10	22.5	0.15	1.5
Wilcox	......	......	......	0.25	2.5
Wilsonville *[1]	60	− 6	23.9	0.15	1.5
York *[1]	60	−10	18.6	0.05	0.5
Nevada.					
Austin	48	− 7	25.0	1.43	12.0
Battle Mountain *[1]	45	−12	26.7	0.95	9.5
Belmont	42	− 6	21.1	1.62	17.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Nevada—Cont'd.	°	°	°	Ins.	Ins.
Beowawe *[5]	48	−21	23.5	0.80	8.0
Carlin *[8]	52	−24	20.1	0.86	8.6
Carson City	56	− 6	28.1	4.59	23.5
Carson City (W. B.)	......	......	......	......	17.0
Clover Valley †	......	......	......	1.19	8.0
Cortez †	......	......	......	1.60	16.0
Cranes Ranch	......	......	......	0.76	......
Downeyville	59	2	34.8	0.15	2.0
Elko *[8]	40	−20	21.7	1.75	17.5
Elko (near)	61	−26	23.8	1.41	16.9
Ely	48	−10	22.2	2.10	21.0
Empire Ranch †	44	−20	18.6	0.95	9.5
Fenelon *[8]	37	−22	19.0	2.12	21.2
Genoa	50	− 3	23.8	6.65	29.0
Golconda *[1]	56	− 3	29.0	1.10	9.5
Gold Hill	58	4	31.4	3.73	43.5
Halleck *[1]	40	−28	17.9	1.95	19.5
Hawthorne *a* *[8]	50	13	31.1	0.90	6.0
Hawthorne *b*	59	3	32.4	0.61	6.5
Hot Springs *[1]	50	− 5	29.4	1.02	6.8
Humboldt *[8]	50	0	27.5	1.08	7.0
Lewers Ranch	58	0	30.2	7.92	39.4
Lovelock *[1]	60	5	32.9	2.30	8.0
Marlette Lake †	......	......	......	9.10	93.0
Mill City *[1]	52	− 5	27.8	......	5.5
Osceola	53	0	26.8	1.97	19.7
Palisade *[1]	44	−10	19.8	1.20	12.0
Palmetto	53	− 8	25.8	5.64	56.4
Paradise Valley	51	−13	25.4	2.41	17.7
Reno *[8]	54	0	29.9	1.90	19.0
Reno State University	57	2	28.8	2.81	16.5
Ruby Valley †	......	......	......	1.14	17.5
St. Clair	53	1	28.6	1.06	8.2
Stofiel	52	−30	18.6	3.73	41.0
Sunnyside	52	−10	24.8	1.19	5.5
Tecoma *[8]	58	−12	23.9	0.92	9.2
Toano *[1]	43	−10	20.1	0.95	9.5
Tybo	37	1	24.7	0.94	20.0
Verdi *[8]	52	− 5	28.5	10.06	43.0
Virginia City	......	......	......	4.75	45.0
Wadsworth *[8]	63	4	28.6	0.75	7.5
Wells *[8]	48	−23	19.8	2.05	20.5
Winnemucca	......	......	......	......	13.7
Yerington	55	− 1	32.2	1.11	5.1
New Hampshire.					
Alstead *[6]	39	−10	17.6	2.88	19.0
Belmont	......	......	......	2.80	......
Berlin [c]	42	−19	12.2	......	......
Berlin Mills	44	−23	14.4	2.86	28.0
Bethlehem	42	−17	17.0	1.06	8.5
Brookline *[1]	44	−11	21.3	3.54	15.5
Concord	42	− 9	20.3	3.25	18.0
Dublin	45	− 7	19.8	3.48	21.0
Grafton	45	−15	18.0	1.98	19.0
Hanover	40	−14	17.3	1.96	12.6
Keene	42	−13	17.9	2.56	16.8
Lakeport	......	......	......	3.05	......
Lancaster	45	−21	18.8	1.88	18.5
Littleton	46	−15	17.2	1.51	15.0
Mine Falls	......	......	......	3.24	......
Nashua	45	− 7	20.0	3.00	17.5
Newton	45	− 2	22.0	3.05	14.5
North Conway	44	−16	17.4	2.00	20.0
Pennichuck Station	......	......	......	2.73	......
Peterboro	42	−16	18.0	3.04	20.5
Plymouth	40	−18	15.1	2.47	17.3
Sanbornton †	41	− 9	18.2	1.96	15.5
Stratford	48	−16	18.4	0.76	8.0
Weirs Bridge	......	......	......	3.96	......
West Milan	42	−29	13.4	2.93	21.8
Wolfboro	......	......	......	2.34	......
New Jersey.					
Allaire	62	8	30.3	......	......
Asbury Park	58	9	30.4	4.37	5.0
Barnegat	55	10	30.7	4.45	9.0
Bayonne	52	11	29.0	5.00	9.0
Beach Haven	51	11	31.7	3.66	5.7
Belvidere	47	1	24.2	2.84	10.0
Beverly †	57	7	29.4	4.67	5.7
Billingsport *[1]	52	11	28.6	3.77	4.5
Blairstown	24	2	25.6	2.48	15.2
Boonton	47	5	25.6	4.52	......
Bridgeton	59	14	33.0	4.75	7.0
Camden	54	11	29.4	4.58	4.6
Cape May	52	15	33.6	3.51	12.5
Cape May C. H. †	54	9	32.1	4.23	13.0
Charlotteburg	47	2	24.7	4.01	11.0
Chester	45	2	24.0	4.55	10.5
Colesville	45	7	23.4	4.57	12.5
Dover	49[e]	4[e]	26.0[e]	4.04	13.5
Egg Harbor City	62	9	30.4	4.44	7.5
Elizabeth †	51	10	28.3	5.68	13.0
Franklin Furnace	46	− 2	23.0	4.35	19.5
Freehold	55	7	29.6	5.08	......
Friesburg	......	......	......	4.45	7.5
Gillette	50	7	26.4	4.92	8.0
Hammonton	......	......	......	4.97	......

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Jersey—Cont'd.	°	°	°	Ins.	Ins.
Hanover	47	6	26.4	4.91	10.0
Hightstown	55	9	28.6	4.09	4.5
Imlaystown	58	8	29.4	3.60	5.0
Junction	......	......	......	4.54	13.2
Lambertville	52	4	28.9	4.77	9.5
Millville	63[e]	9[e]	32.2[e]	4.42	10.0
Moorestown	59	8	29.8	4.80	5.5
Newark *a*	52	11	28.9	5.20	8.0
Newark *b* †	51	10	28.6	5.55	11.2
New Brunswick *a*	52	7	28.0	5.44	7.1
New Brunswick *b*	50	10	29.7	5.13	7.1
Newton	46	2	23.4	3.76	23.0
Ocean City	56	9	31.6	3.66	3.0
Oceanic	61	12	32.4	4.99	6.2
Papakating	48	4	26.8	4.52	20.0
Paterson	51	10	29.2	5.50	13.5
Perth Amboy	52	10	28.6	5.62	......
Plainfield	51	9	28.6	5.02	9.2
Pochunk Mountain	44[d]	2	21.8[e]	4.10	21.5
Rancocas *	52	8	......	4.30	5.4
Readington *[6]	54	10	32.2	......	......
Ringoes	......	......	......	4.97	......
River Vale	49	− 4	26.1	5.01	13.5
Salem	59	12	31.2	4.55	5.0
Somerville	53	1	27.7	3.48	......
South Orange	50	8	27.2	5.63	13.5
Tenafly	49	− 2	26.1	5.80	12.0
Toms River	63	6	31.4	5.61	7.2
Trenton	56	10	31.2	5.26	......
Vineland	63	9	31.6	5.53	10.0
Whiting	64	10	33.3	4.70	4.5
Woodbine	62	9	31.8	4.33	9.0
New Mexico.					
Albert †	63	− 3	35.4	0.22	2.2
Albuquerque †	58	8	33.9	1.29	1.5
Alma †	64	13	36.4	1.21	......
Aztec †	53[f]	0[f]	27.0[f]	0.85	5.2
Bloomfield †	51	− 2	23.8	0.74	6.0
Chama †	55	−17	23.0	5.30	53.0
Deming *[3]	72	26	49.2	0.50	2.0
East Las Vegas †	59	− 6	32.8	1.00	8.0
Eddy †	72	5	41.9	0.65	6.0
Engle †	......	......	......	0.35	3.5
Estalina Springs	55	0	31.0	0.66	5.5
Fort Bayard	66	12	37.8	1.25	8.0
Fort Stanton †	60	− 3	36.4	0.47	4.7
Fort Wingate	63	− 3	30.2	2.05	14.5
Fresnal	56	5	33.1	0.88	6.5
Galisteo †	52	4	31.4	1.20	......
Gallinas Spring †	61	−11	35.1	0.56	7.0
Gila	61	19	42.0	2.14	4.5
Halls Peak [c] †	55	−14	30.6	0.77	7.5
Lordsburg *[3]	56	23	40.4	0.20	2.0
Los Lunas †	61	7	34.0	0.95	......
Monero †	44	−15	19.7	1.99	......
Pecos	......	......	......	1.52	20.0
Pojuaqua	......	......	......	0.34	......
Raton †	......	− 7	......	0.07	0.8
Rincon †	65	9	39.8	0.35	3.5
Roswell †	69	− 1	38.2	0.40	4.0
San Marcial †	63	5	36.5	0.15	1.5
Santa Fe	......	......	......	......	14.6
Springer	60	−10	32.0	T.	T.
New York.					
Addison	45	−12	19.8	3.11	20.1
Akron	......	......	......	3.37	......
Albany	......	......	......	......	13.5
Alfred Center	47[d]	− 5[d]	20.4[d]	3.39	29.0
Angelica †	48	−15	18.3	3.35	25.0
Arcade	44	− 4	18.8	3.79	35.7
Arkwright	44	0	21.5	......	......
Atlanta	......	......	......	0.94	......
Baldwinsville	44	− 7	21.1	3.26	26.0
Bedford	50	1	26.3	4.09	20.5
Big Sandy *[10]	44	−20	22.4	......	......
Binghamton †	45	−15	19.5	3.18	15.7
Boonville	......	......	......	1.52	......
Bovina Center	......	......	......	3.44	......
Brentwood	57[e]	6	27.1	6.05	7.4
Brookfield	44	−24	21.7	1.70	11.0
Brooklyn	50	12	28.9	6.18	13.5
Buffalo	......	......	......	......	33.6
Canton †	45	−24	16.5	2.30	16.5
Charlotte *[10]	42	5	24.4	......	......
Cherry Creek	......	......	......	4.17	......
Cooperstown †	48	−16	18.8	2.34	18.8
Cortland	41	− 6	19.4	2.95	......
De Kalb Junction	......	......	......	2.50	......
Demster	......	......	......	1.80	......
Deposit	......	......	......	1.90	......
Easton	......	......	......	1.43	......
Eden	50	0	20.1	10.20	52.0
Elmira †	43	−11	22.2	2.70	......
Fort Niagara †	47	2	23.8	1.96	13.0
Friendship	48	−16	18.5	3.08	17.6
Fulton	......	......	......	2.08	......
Glens Falls	45	−10	18.6	2.52	17.5

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
	°	°	°	*Ins.*	*Ins.*
New York—Cont'd.					
Gloversville	41	—12	18.1	2.86	23.3
Hamilton	43	—24	17.7	2.22	18.0
Hess Road Station†	45	— 3	22.5	3.01	23.2
Honeymead Brook	47	— 1	21.5	3.11	18.2
Humphrey†	47	— 3	21.2	3.25	34.0
Hyndsville	51	—15	19.8	......	......
Ithaca	42	— 5	20.5	2.18	17.1
Jamestown a *[6]	45	— 2	22.8	......	......
Kings Station	......	......	......	2.16	......
Lebanon Springs	46	—16	21.5	3.20	21.8
Le Roy	44	— 3	20.0	5.82	52.0
Lockport	43	— 3	20.6	3.32	26.0
Lowville	43	—23	16.8	3.22	37.0
Lyons	44	4	24.8	2.12	19.5
Madison Barracks†	49	—19	20.8	3.96	40.0
Malone	42	—20	16.8	2.18	18.9
Massena	42	—13	18.1		
Middletown	44	3	22.7		
Minnewaska	46	1	20.8	3.40	
Mount Morris	48	— 9	22.1		
Newark Valley				2.67	
New Lisbon	45	—22	17.3	2.03	22.0
New York					12.3
North Hammond†	42	—16	17.3	3.58	45.2
Number Four†	40	—24	15.9	4.78	40.7
Ogdensburg	45	—18	16.2		
Oneonta	52	—10	23.6	3.47	
Oswego					21.2
Oxford	44	—18	19.2	3.46	21.0
Palermo†	40	—15	19.7	1.96	14.7
Perry City	44	— 9	18.9	2.82	23.4
Phœnix				3.37	
Pine City				1.01	
Plattsburg Barracks	50	—18	18.7	2.07	19.2
Port Jervis	44	— 1	21.5	3.77	18.0
Potsdam	43	—19	15.9	4.50	45.0
Poughkeepsie	47	—15	20.7	3.39	7.0
Rochester					26.5
Rome	44	—14	20.2	1.89	
Romulus	43	3	22.2	1.81	13.6
Saranac Lake	44	—30	14.6	1.84	19.2
Setauket†	56	12	29.5	5.40	9.5
Skaneateles				2.79	
South Canisteo	51	— 9	19.1	3.32	26.1
South Kortright†	48	—20	18.6	1.76	
Stillwater	46	—20	20.5	2.69	15.5
Turin	40	—14	16.5	5.51	50.0
Varysburg	45	—14	20.2	2.10	13.4
Wappingers Falls	46	—14	20.8	3.64	20.0
Warwick				2.76	
Watertown	46	—18	20.3	3.65	
Waverly†	43	—16	19.5	2.56	17.0
Wedgwood	48	— 4	19.6	2.30	17.5
West Chazy	43*	—19*	17.3*	1.80	
West Point†	54	4	23.1*	5.49	45.9
Willets Point	58	9	28.2	5.37	7.5
North Carolina.					
Asheville†	60	— 1	34.2	4.92	8.0
Bailey *[5]	64	6	39.6	5.69	4.5
Bakersville†	60	—10	33.2	4.60	11.0
Blowing Rock†[8]	48	—18	27.0	6.22	8.0
Bryson City†				7.87	8.0
Chapel Hill†	68	4	37.6	8.90	......
Charlotte					1.0
Currituck Inlet†				4.57	
Erie Mills				6.51	
Experimental Farm	67[a]	7[a]	39.2[a]	6.61	
Fair Bluff†				9.56	0.2
Falkland *[1]	69	12	41.2	4.82	1.7
Fayetteville†				7.67	T.
Greensboro†				4.38	
Greenville				6.10	3.5
Henderson†	68	4	37.0	7.53	5.5
Highlands	57	—14	32.6	9.00	7.5
Horse Cove†	58	— 8	35.5	9.33	6.7
Lenoir *†[1]	62	1	35.0	6.07	5.9
Linville†	54	—15	27.9	6.62	11.0
Littleton†	67	7	37.8	4.48	2.0
Louisburg†	67	8	38.4	5.70	1.0
Lumberton†	69	8	44.0	9.04	
Lynn *†[8]	69		36.7	7.47	
Marion	68	— 4	36.5	5.05	8.0
Mocksville†	65	1	38.5	5.71	2.0
Moncure†	69	3	38.8	8.61	
Morganton *†[1]	62	0	36.1	3.64	3.5
Mount Airy†	60	— 7	34.1	5.65	11.0
Mount Pleasant	65	4	39.0	6.74	1.0
Newbern†	76	17	46.0	6.30	
Oak Ridge†	61	— 2	35.0	6.31	4.7
Pantego				4.88	
Pittsboro	64	6	36.4	9.21	3.0
Raleigh *†[1]	65	4	41.4		
Raleigh (W. B.)†					T.
Rockingham†	75	4	44.1	9.35	T.
Roxboro†	59[1]	1	37.0*	6.26	3.5
Salisbury	62	7	40.0	5.87	1.7
Saxon†	63	— 4	36.5	5.75	7.2
North Carolina—Cont'd.					
Selma	71	9	41.4	5.68	
Skyuka	62	— 1	36.5	9.17	6.0
Sloan†	73	18	45.8	6.05	
Soapstone Mount†	68	2	37.3	6.19	2.0
Southern Pines†	74	7	40.3	7.60	
Southport	72	20	46.2	5.76	
Tarboro	71	11	41.0	4.54	0.2
Waynesville†	62	— 4	35.4	6.97	6.0
Weldon	67	10	38.6	5.26	......
Willeyton	70*	14*	39.4*	3.91	2.0
North Dakota.					
Ashley†	31	—29	0.0	0.75	7.5
Berlin†	33	—38	—2.5	0.88	8.8
Bismarck					8.9
Bottineau†	28	—30	—6.2	0.75	7.5
Churchs Ferry	29	—34	—7.3	0.60	6.0
Devils Lake	30	—31	—4.4	0.51	6.5
Dickinson†	38	—35	1.8	0.10	1.0
Ellendale	32	—30	1.4	0.33	4.7
Fargo†	25	—36	—4.4	0.36	......
Forman†	31	—36	—3.4	0.55	7.0
Fort Berthold	34	—46	0.6	0.85	8.5
Fort Yates†	......	—25	......	1.11	11.0
Gallatin†	30	—38	—4.8	0.42	4.4
Grafton†	29	—26	—0.1	0.60	6.0
Jamestown†	31	—30	1.4	0.63	6.3
Kelso†[1]	27*	—36	—2.7	0.75	7.5
Lakota	31	—31	—2.8	0.31	2.4
Larimore†	38	—27	—0.4	0.00	
Lemert†	30	—32	—5.0	0.20	2.0
McKinney	31	—31	—4.1	0.30	3.0
Milton†	28	—34	—9.3	0.50	5.0
Minto†	32	—30	—5.8	0.36	......
Napoleon†	30	—28	—2.4	1.20	12.0
New England City†	40	—28	5.2	0.26	2.6
Oakdale†	42	—25	3.4	0.70	5.9
Portal†	28	—30	—4.8	0.30	3.0
Power†	26	—34	—2.8	0.75	7.5
St. John†	29	—27	—5.2	0.80	8.0
Sheyenne	32	—30	—3.2	0.40	4.0
Steele†	32	—33	—2.2	0.45	4.5
University†	26	—26	—1.5	0.31	3.1
Wahpeton†	31	—28	0.1	0.50	5.0
Washburn	34	—33	3.8	0.92	3.5
White Earth *[1]	30	—28	—4.9	0.40	4.0
Wild Rice†[2]	......	......	—3.8	0.81	8.1
Williston	......	......	......	......	5.4
Willow City†	30	—37	—7.1	0.80	8.0
Woodbridge†	27	—38	—8.5	0.19	1.9
Ohio.					
Akron	53	— 6	22.4	3.69	14.4
Annapolis	54	— 8	22.7	2.70	2.0
Arcanum				3.17	12.5
Ashland	52	— 5	21.0	4.83	24.5
Athens	58	—10	27.1	4.14	7.5
Atwater				3.85	19.0
Auburn	51	—11	19.5	3.30	9.3
Bangorville	51	—12	21.1	3.74	18.0
Bellefontaine	54	— 8	22.7	3.72	16.8
Benton Ridge	54	— 8	21.5	2.65	21.0
Bethany	59	—11	23.9	5.70	19.0
Big Prairie	54	— 7	21.3	4.24	22.5
Binola	54	— 6	24.7	4.02	18.5
Bissells	59	— 8	20.0	3.70	19.0
Bladensburg	55	—10	21.3	4.45	15.0
Bloomingburg	57	—11	24.7	5.48	18.0
Bowling Green	52	— 7	19.7	2.11	15.5
Bucyrus	54	— 8	22.8	4.10	15.0
Caledonia†				3.05	24.0
Cambridge	56	— 8	23.3	4.62	13.0
Camp Dennison	59	— 9	25.5	6.01	16.5
Canal Dover	55	— 7	22.8	5.19	11.5
Canton†	58	— 5	23.8	4.15	7.8
Cardington	44	—11	14.3	2.00	16.5
Carrollton	55	— 8	22.5	4.30	12.0
Cedarville	......	......	......	5.20	22.2
Celina	60	— 9	27.4	......	......
Cherry Fork	59	—19	25.6	5.01	5.4
Cincinnati†	......	......	......	......	17.9
Circleville a	......	......	......	4.74	13.0
Circleville b	59	—10	26.0	4.99	16.5
Clarksville	58	—13	24.6	5.30	13.2
Cleveland	56	— 5	24.0	2.91	13.1
Cleveland (W. B.)	......	......	......	......	8.5
Clifton	56	—13	22.8	4.15	15.5
Coalton	59	—19	26.2	4.01	15.5
Colebrook	48	—12	18.7	3.54	10.9
Columbus	......	......	......	......	18.9
Cynthiana	60	—10	27.2	7.36	31.0
Dayton a†	......	......	......	4.87	23.6
Dayton b	......	......	......	4.08	14.9
Defiance	55	— 9	20.0	1.80	13.8
Demos	53	—11	23.6	4.55	15.4
Dupont	54	— 9	19.8	3.98	22.0
Ellsworth	58	— 7	21.7	3.92	11.2
Elyria	55	— 5	21.7	1.66	2.8
Ohio—Cont'd.					
Fayetteville	56	—12	24.9	6.84	21.4
Findlay	53	— 9	21.5	3.33	20.0
Fostoria	54	— 8	22.8	2.85	18.0
Frankfort	59	— 9	26.2	5.17	16.0
Garrettsville	52	—11	19.9	3.70	13.1
Georgetown	58	—10	27.9	......	......
Granville	56*	— 9	21.0	4.73	14.3
Gratoit	56	—11	24.5	4.07	17.0
Greenhill	53	—11	20.7	4.43	10.1
Greenville	55	—10	22.9	2.22	10.0
Guysville	57	—12	26.7	4.99	7.0
Hackney	55	— 9	25.5	4.27	6.0
Hanging Rock	59	—13	30.1	4.53	8.5
Harbor	52	— 5	22.9	3.44	17.5
Hebbardsville	58	—12	28.3	3.43	9.0
Hedges	47	—12	21.1	3.22	26.0
Hillhouse	52	— 9	20.7	5.41	37.0
Hillsboro	58	—15	25.3	5.27	16.5
Hiram	45	—10	20.4	3.33	9.5
Jacksonboro	58	—12	24.8	5.10	24.0
Kenton†	56	—10	22.8	2.31	14.5
Kilbourne	54	— 9	23.0	2.00	12.5
Killbuck	52	— 9	22.6	4.13	11.1
Leipsic	56	— 6	22.0	2.67	19.3
Levering	53	—16	17.6	3.17	16.6
Logan	58	—10	26.2	3.80	7.9
Lordstown	55	— 9	21.0	3.84	14.0
Lowell	58	— 7	26.5	1.80	4.0
McArthur	56	—12	26.6	5.05	6.5
McConnelsville	60	— 8	26.7	5.49	10.7
Mansfield†	......	......	......	3.53	20.3
Marietta a†	......	......	......	4.97	6.0
Marietta b	57*	— 4*	23.0*	5.43	11.5
Marion	54	— 9	22.4	4.07	16.4
Medina	55	— 7	20.5	2.92	12.0
Milfordton	51	—11	20.1	4.90	21.5
Milligan	58	—10	25.4	4.15	12.0
Millport	......	......	......	4.10	8.0
Montpelier	48	— 8	17.9	2.79	13.0
Napoleon	52	— 7	20.4	2.07	15.2
New Alexandria	53	— 9	24.1	6.24	14.0
New Berlin	55	— 7	21.0	3.77	12.7
New Bremen	56	—12	22.2	2.38	9.6
New Comerstown	55	— 9	21.8	4.18	8.5
New Holland	59	—14	23.6	6.83	29.2
New Paris	56	—12	21.4	3.63	14.0
New Waterford	62	—14	23.3	6.90	26.5
North Lewisburg	57	— 8	22.1	4.45	25.0
North Royalton	52	— 8	21.5	3.03	11.0
Northwood	56	—12	23.6	2.32	14.7
Norwalk	56	— 9	20.5	2.85	11.0
Oberlin	54	— 7	21.7	2.82	15.2
Ohio State University	56	— 9	23.2	4.38	18.1
Ottawa	52	— 8	21.4	3.07	22.0
Pataskala	55	—10	22.0	4.87	13.2
Peoli	54	— 1	23.3	4.29	15.5
Plattsburg	55	—11	22.5	3.85	15.0
Point Marblehead *[10]	49	0	20.8	......	
Pomeroy	57	— 8	26.7	4.20	11.9
Portsmouth a	......	......	......	5.04	10.0
Portsmouth b	60	— 5	31.5	5.19	12.5
Richwood	......	......	......	4.09	16.2
Ridgeville Corners	52	— 9	19.5	3.07	14.0
Ripley	59	—11	27.2	4.89	13.5
Rittman	54	— 8	20.6	3.65	10.1
Rocky Ridge	58	— 5	22.0	2.11	12.9
Rosewood	55	— 9	22.2	3.84	16.0
Sandusky	......	......	......	......	13.7
Sharon Center	......	......	......	2.30	9.0
Shenandoah	54	— 9	20.9	2.60	15.2
Sidney a†	......	......	......	3.08	11.0
Sidney b	48	— 8	22.4	3.28	17.5
Springboro	......	......	......	3.56	......
Steuben *[1]	56	— 2	23.3	2.00	11.0
Stoutsville	......	......	......	6.12	21.0
Sylvania	50	—10	18.5	2.89	19.0
Thurman	50	—11	28.6	4.41	8.0
Tiffin†	54	— 6	22.6	2.74	17.0
Toledo	......	......	......	......	22.3
Upper Sandusky	54	— 8	22.3	3.14	16.5
Vanceburg	62	— 8	29.2	4.44	10.0
Van Wert	55	—10	20.4	2.09	13.7
Vermilion	56	— 7	21.3	3.03	19.0
Vickery	55	— 5	21.6	2.85	13.5
Walnut	......	......	......	4.60	15.0
Warren	58	— 7	22.0	4.30	13.6
Warsaw	56	— 9	23.1	3.29	6.0
Wauseon	50	—11	18.8	2.27	18.2
Waverly	60	—12	27.6	5.43	9.4
Waynesville	......	......	......	5.01	16.7
Wellington	55	— 9	22.3	2.65	12.0
Westerville	55	— 6	24.7	4.27	16.0
Wheeler	......	......	......	3.05	29.0
Willoughby	......	......	......	2.65	3.2
Wooster a	54	— 6	21.8	3.97	12.5
Youngstown	52	— 4	22.0	3.02	3.5
Zanesville†	......	......	......	3.98	12.5

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Oklahoma.	°	°	°	*Ins.*	*Ins.*
Anadarko†	76	−9	36.0	0.95	6.0
Arapaho†	77	−10	31.8	1.01	9.7
Burnett†	72	−15	35.0	1.32	7.2
Clifton†	70	−16	32.0	1.41	12.0
Fort Reno†	73	0	31.4	1.10	6.0
Fort Sill	75	−6	35.6	0.56	4.7
Guthrie†	73	−3	33.7	1.05	9.8
Mangum†	74	−5	38.6	0.40	4.0
Norman†	71	−4	35.1	0.98	4.1
Oklahoma†	......	......	......	......	9.0
Ponca†	74	−4	31.2	0.58	3.0
Pond Creek†	75	−5	28.8	0.98	10.0
Sac and Fox Agency†	74	−7	33.2	1.65	16.5
Winnview†	73	−2	32.8	1.19	11.7
Oregon.					
Albany *a*†	61	24	39.5	12.25	......
Arlington†	49	7	27.9	2.79	22.5
Ashland *b*	62	20	37.6	2.94	9.2
Astoria	......	......	......	......	3.5
Aurora *[8]	62	25	41.4	10.54	......
Aurora (near)	58	21	38.1	9.78	......
Baker City	......	......	......	......	25.5
Bandon	58	28	44.3	22.74	
Brownsville *[8]	64	18	40.9	8.85	
Burns†	49	−27	18.8	1.20	12.0
Canyon City†	55	8	32.5	2.13	11.7
Cascade Locks	46	20	33.1	12.71	......
Comstock *[8]	60	18	38.8	8.60	
Cornelius	56	20	36.9	11.99	22.0
Corvallis *a*	61	23	38.3	11.65	1.0
Corvallis (near)	61	22	38.4	13.96	
Crook	51	−4	27.7	1.38	13.8
Detroit†	45	12	31.8	14.10	48.5
East Portland	59	20	......	8.49	......
Eugene†	62	23	40.2	6.88	
Forest Grove	55	21	35.3	11.87	25.6
Gardiner	60	28	43.4	17.03	
Glenora	55	18	34.8	23.53	21.6
Grants Pass *a*†	60	19	38.4	6.87	T.
Happy Valley†	56	−10	27.8	0.66	5.4
Heppner†	61	7	30.8	1.99	14.8
Hood River (near)	48	7	30.6	10.85	80.5
Hubbard	58	22	37.2	11.08	1.0
Jacksonville	56	19	36.0	4.46	2.2
Joseph†	51	−4	22.5	3.10	31.0
Junction City*[8]	48	22	34.2	5.98	......
Lafayette*[8]	58	23	38.9	10.43	14.5
La Grande†	51	7	30.8	0.94	8.0
Lakeview†	45	−19	20.3	5.15	46.0
Langlois	68	29	45.1	24.73	
Lone Rock	55	1	26.2	2.42	28.2
McMinnville *a*†	58	21	37.2	11.42	18.5
McMinnville *b**[8]	58	24	36.0	8.75	21.8
Merlin*[8]	58	14	35.3	9.63	3.0
Monmouth*[8]	60	27	42.3	9.16	11.5
Mount Angel†	62	22	38.6	11.21	T.
Nehalem	......	......	......	19.47	3.5
Newport	77	28	45.7	13.68	......
Pendleton	60	5	30.8	2.23	15.1
Portland	......	......	......	......	27.9
Riddles*[8]	58	18	37.8	4.64	......
Salem *b*†	60	22	39.0	13.72	......
Sheridan*[8]	59	23	39.2	13.29	6.5
Silverton*[8]	58	18	37.8	10.87	T.
Siskiyou*[8]	49	22	33.8	10.10	101.0
Sparta	43	1	24.5	3.50	35.0
Springbrook	59	25	38.3	12.32	13.8
Springfield*[8]	58	18	37.6	7.57	......
The Dalles†	48	8	29.7	4.72	52.7
Toledo	60	18	42.4	......	......
Umatilla	......	......	......	1.96	......
Vale	47	−3	24.5	1.15	10.1
West Fork*[8]	58	22	38.9	13.04	1.0
Weston	56	6	31.8	2.67	17.5
Williams	60	20	38.4	6.89	2.0
Pennsylvania.					
Altoona	68	9	33.9	3.22	......
Aqueduct	50	−1	25.8	3.72	11.8
Beaver Dam†	......	......	......	4.19	6.0
Bethlehem	......	......	......	4.04	......
Blooming Grove *[1]	46	−6	21.3	3.92	15.0
Brookville†	......	......	......	3.17	12.0
Browers Lock	......	......	......	4.82	......
Carlisle *a*	45	2	24.2	3.74	10.5
Cassandra	51	−14	22.4	4.71	27.0
Chambersburg†	46	−3	24.0	3.00	7.0
Clarion†	......	......	......	4.13	20.4
Coatesville	48	5	27.3	5.08	7.2
Confluence†	......	......	......	2.98	16.3
Coopersburg	46	5	27.0	4.19	7.3
Davis Island Dam†	......	......	......	3.91	......
Doylestown	......	......	......	3.98	......
Drifton	49[a]	−3[a]	25.1[a]	1.69	8.0
Dubois†	......	......	......	4.83	25.9
Dyberry†	47	−15	18.2	2.95	19.0
East Mauch Chunk	43	1	22.8	5.06	13.5
Easton	49	0	25.0	3.56	7.2

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Pennsylvania—Cont'd.	°	°	°	*Ins.*	*Ins.*
Edinboro *[1]	45	4	19.4	......	......
Ellwood Junction†	......	......	......	4.25	10.5
Emporium	43	−17	19.5	4.79	25.9
Erie	......	......	......	......	22.2
Forks of Neshaminy *[1]	52	14	31.4	4.98	5.0
Frederick	......	......	......	4.19	......
Freeport†	......	......	......	4.93	17.0
Girardville	......	......	......	3.82	19.0
Grampian	50	−12	18.7	5.19	28.0
Greensboro†	......	......	......	4.34	6.0
Greenville	50	−10	21.0	3.50	15.5
Hamburg	47	2	26.2	5.82	......
Harrisburg	......	......	......	......	9.0
Hollidaysburg	47	−11	21.9	5.74	21.0
Honesdale	49	−12	22.5	3.68	16.5
Huntingdon†	45	−7	24.2	5.16	15.5
Johnstown†	49	−5	25.0	4.91	15.0
Kennett Square	51	7	28.3	5.30	8.5
Lancaster	57	1	28.1	4.17	7.8
Lansdale	......	......	......	5.09	......
Lebanon	44	0	23.9	4.70	15.1
Le Roy†	46	−4	18.9	3.27	21.7
Lewisburg	44	−15	18.9	3.10	14.0
Lock Haven†	49	−13	20.4	4.73	29.0
Lock No. 4†	......	......	......	3.64	21.0
Lycippus	55	−9	24.1	4.06	12.8
Mahoning†	......	......	......	4.65	20.1
Oil City†	......	......	......	4.63	14.8
Ottsville	......	......	......	3.93	......
Parker†	......	......	......	4.16	10.0
Philadelphia *a*	......	......	......	5.55	......
Philadelphia *b*	53	12	30.8	5.06	4.8
Philadelphia (W. B.)	......	......	......	......	4.6
Phœnixville	50	5	27.7	5.47	12.0
Pittsburg	......	......	......	......	8.3
Point Pleasant	......	......	......	4.63	......
Pottstown	49	6	27.4	5.65	4.5
Quakertown *a*	48	2	25.4	3.73	8.0
Reading[5]	......	......	25.4	3.90	......
Ridgway†	......	......	......	3.84	16.2
Saegerstown	50	−12	21.2	3.92	18.0
Salem Corners	50	−4	22.6	4.42	24.4
Saltsburg†	......	......	......	4.83	14.2
Seisholtzville	......	......	......	4.40	......
Selinsgrove	......	......	......	......	7.7
Shinglehouse	44	−15	16.8	1.83	15.8
Smethport	47	−16	18.9	4.10	20.5
Smiths Corners	......	......	......	4.47	......
Somerset	48	−13	18.9	6.36	32.0
South Bethlehem	48	5	24.8	......	6.0
South Eaton	47	−11	21.6	2.35	12.5
State College	46	−5	21.8	4.18	23.8
Stoyestown†	......	......	......	3.37	16.0
Towanda	44	−16	19.0	1.95	20.5
Uniontown	58	−7	27.7	4.89	14.0
Warren	......	......	......	3.22	14.0
Wellsboro *†[1]	45	−16	18.6	3.00	25.0
West Chester	49	7	27.9	4.95	6.8
West Newton†	......	......	......	3.96	10.3
Wilkesbarre†	47	−2	24.4	3.43	13.0
York†	47	1	25.7	4.03	9.5
Rhode Island.					
Block Island	......	......	......	......	6.8
Bristol	51	7	28.8	3.69	10.5
Kingston	50	3	26.9	5.94	16.0
Lonsdale	......	......	......	5.19	12.5
Narragansett Pier	......	......	......	......	8.9
Pawtucket	52	4	28.3	5.29	15.2
Providence *a*	54	6	29.4	5.74	13.8
Providence *c*	54	4	27.3	5.91	11.0
South Carolina.					
Anderson†	......	......	......	8.08	
Blackville†	71	12	46.4	7.70	
Blenheim *[3]	......	12	41.6	5.68	
Branchville	74	16	48.6	6.41	
Camden†	......	......	......	8.09	3.0
Central[2]	......	......	38.9	7.95	T.
Cheraw *a*†	70	8	42.4	6.69	
Cheraw *b*	......	......	......	7.90	
Columbia	......	......	......	......	T.
Conway†	......	......	......	10.10	T.
Darlington *[1]	68	13	43.5	......	......
Edisto	......	......	......	9.13	
Effingham†	......	......	......	7.27	T.
Georgetown	75	20	45.3	7.58	
Greenwood†				11.83	
Hardeeville†	73	20	48.8	7.49	......
Holland†	71	8	41.6	8.07	0.5
Kingstree *b*†	......	......	......	7.57	
Little Mountain	74	5	44.8	6.13	T.
Longshore†	68	9	41.0	8.30	1.0
Mount Carmel†	......	......	......	6.83	
Pinopolis *[1]	67	20	46.6	9.27	
Port Royal†	69	22	49.4	4.23	
Ridgeway†	69	7	43.1	5.00	
St. George†	74	16	48.0	8.59	
St. Stephens†	......	......	......	8.78	......

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
South Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Santuck	68	6	41.8	7.47	T.
Shaws Fork *[1]	80	17	48.2	5.70	
Society Hill†	70	14	44.0	6.83	
Statesburg†	72	12	45.1	8.44	
Timmonsville *[1]	68	24	46.7	......	......
Trenton	68	9	46.6	8.28	T.
Trial†	80	15	49.5	9.16	
Watts *[5]	70	9	42.4	10.20	T.
Yorkville	65	5	41.5	5.88	T.
South Dakota.					
Aberdeen†	38	−34	−2.0	1.92	17.8
Alexandria†	42	−22	6.3	0.40	4.0
Ashcroft†	47	−25	10.4	0.98	9.3
Bowdle *†[1]	36	−24	1.2	0.85	8.5
Brookings†	34	−24	4.4	0.25	2.5
Buffalo Gap *[1]	71	−10	22.3	0.20	2.0
Castlewood†	32	−26	1.9	0.34	3.4
Cheyenne Agency†	34	−25	1.8	1.00	16.0
Cross†	55	−15	19.2	0.24	5.0
De Smet[h]	37	−25	5.1	0.50	5.0
Farmingdale	......	......	......	0.10	2.8
Faulkton†	32	−27	0.8	......	......
Flandreau†	33	−23	5.6	0.47	4.8
Forestburg†	39	−25	6.6	0.35	3.6
Fort Meade	54	−11	15.0	0.85	8.5
Gary†	33	−34	−2.2	0.25	1.5
Greenwood	52	−15	18.7	0.34	3.5
Highmore†	56	−26	3.7	0.20	2.0
Hotch City†	41	−21	10.2	0.20	2.0
Hot Springs†*	62	−12	19.4	0.33	2.8
Howard†	36	−23	4.8	0.20	2.0
Huron	......	......	......	......	8.8
Ipswich *[1]	35	−34	2.6	0.70	7.0
Kimball†	39	−22	8.8	0.36	3.0
Millbank†	32	−26	3.0	0.20	2.0
Northville *[1]	34	−33	0.6	0.74	7.4
Oelrichs†	49	−17	15.2	1.50	15.0
Parker†	40	−24	8.4	0.70	7.0
Parkston†	45	−25	6.4	0.24	2.4
Piedmont	......	......	......	0.37	3.0
Pierre	......	......	......	......	7.0
Plankinton†	44	−20	8.3	0.20	2.0
Rapid City	......	......	......	......	3.1
Rosebud†	58	−15	17.2	1.20	12.0
Shiloh†	35	−30	6.0	0.12	1.2
Silver City	......	......	......	0.22	2.2
Sioux Falls†	39	−22	7.2	0.50	5.0
Spearfish†	58	−10	18.6	1.50	13.0
Tyndall†	53	−16	13.4	0.05	0.5
Vermillion	40	−17	13.1	0.28	2.8
Watertown†	32	−25	2.4	0.50	5.0
Webster†	32	−34	3.6	0.77	5.0
Wentworth	33	−25	4.6	0.38	3.8
Wessington Springs†	38	−20	8.4	0.47	4.8
Yankton†	49	−16	12.1	0.34	......
Tennessee.					
Andersonville *[1]	53	−6	31.9	4.64	14.2
Ashwood *†[1]	62	4	36.5	4.50	12.8
Bolivar	68	7	37.4	5.06	9.5
Bristol†	55	−15	29.5	5.59	15.0
Byrdstown *†[1]	60	−6	33.7	8.10	19.5
Carthage†	......	......	......	6.80	6.8
Charleston†	......	......	......	8.08	5.0
Chattanooga	......	......	......	......	3.8
Clarksville	64	4	32.8	5.83	22.0
Clinton†	......	......	......	7.84	19.0
Columbia†	......	......	......	5.66	7.0
Covington *a*†	68	6	34.6	6.96	11.5
Covington *b*[h]	67	8	37.2	......	......
Fairmount *[5] [f]	56	7	34.2	......	......
Florence†	62	1	34.5	6.38	9.5
Franklin†	63	−4	33.6	6.55	18.0
Greeneville†	57	−8	34.3	4.98	13.0
Harriman†	61	−3	33.5	5.96	7.4
Hohenwald *[3]	......	8	34.6	6.03	11.6
Jacksboro *[4]	......	−3	32.6	5.60	14.8
Jackson *†[1]	63[d]	8[b]	33.6[c]	4.45	12.0
Johnsonville†	......	......	......	5.89	7.8
Kingston†	......	......	......	7.90	8.4
Knoxville	......	......	......	......	12.0
Loudon†	......	......	......	7.17	9.0
Lynnville *[1]	71	6	37.3	7.10	19.0
McMinnville†	......	......	......	4.43	4.2
Memphis	......	......	......	......	6.5
Nashville	......	......	......	......	14.0
Newport *[3]	60	−3	33.4	5.69	11.0
Nunnelly *[1]	65	0	36.4	6.24	12.2
Palmetto†	......	......	......	6.74	......
Parksville *[1]	62	5	38.6	8.91	4.0
Riddleton†	65	−1	34.8	5.31	5.5
Rockwood†	......	......	......	7.58	8.0
Rogersville *[1]	55	−5	33.7	4.08	9.0
Rugby *[1]	50	−6	32.9	8.37	23.8
St. Bethlehem	62	−4	33.6	5.38	15.0
Springdale *[1]	56	−10	33.2	7.86	26.0
Strawberry Plains†	......	......	......	6.65	11.0
Tullahoma *†[1]	61	−3	34.2	7.45	12.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Waynesboro *[1]	63	6	37.0	4.54	8.0
Texas.					
Abilene	......	......	......	......	6.0
Albany *†[1]	70	12	43.4	1.22	12.0
Amarillo	......	......	......	......	18.0
Arthur City†	......	......	......	2.39	5.0
Aurora *[1]	80	7	42.5	1.62	10.0
Austin *a*†	68	28	43.3	1.30	
Austin *b* *[5]	76	26	49.9	......	
Bellville *[5]	78	28	55.0	......	......
Boerne *†[3]	72	24	50.2	1.48	
Brady†	77	16	45.4	1.12	2.3
Brazoria†	81	22	56.4	1.53	
Brenham†	81	25[d]	53.6[d]	2.00	
Burnet *†[1]	80	22	51.1	1.29	12.9
Camp Eagle Pass†	85	30	54.4	0.20	
Coldwater†[5]	58	—16	27.7	0.35	3.5
Coleman	......	14	42.6	1.20	6.0
College Station	79	20	49.2	1.45	
Columbia†	81	23	56.4	2.05	
Corsicana *a*†	81	19[e]	47.6[e]	1.92	3.5
Corsicana *b*†	78	10	41.2	1.58	3.0
Cuero†	85	26	60.4	0.82	
Dallas†	78	10	42.4	2.67	5.0
Durham†	......	......	......	0.80	8.0
Duval *[1]	79	22	50.1	0.70	
El Paso					2.5
Estelle†	78	10	42.1	1.47	9.0
Flower Bluff†	78	21	58.8	0.54	
Forestburg†	78	6	40.4	0.90	9.0
Fort Brown†	84	32	61.0	0.47	
Fort Clark	78	24	52.0	0.17	
Fort Hancock	72	9	42.5	0.70	......
Fort McIntosh	85	25	59.0	T.	
Fort Ringgold†	90	26	60.0	0.40	
Fort Stockton†	......	......	......	0.81	0.5
Fort Worth†	76[d]	12[d]	45.1[d]	2.37	10.4
Fredericksburg *†[1]	72	21	45.6	1.30	
Golindo				1.30	13.0
Graham†	80	— 5	39.6	1.02	10.0
Grape Vine†	77	10	41.6	2.93	8.0
Hale Center†	69	7	41.6	0.35	3.5
Hallettsville†	82	23	53.5	1.09	
Happy	70	— 6	34.4	0.51	4.5
Hartley†	65	—14	28.4	0.24	2.5
Haskell				1.20	12.0
Hewitt				1.90	3.3
Houston†	80	24	51.7	1.89	
Huntsville†	80	20	50.2	3.06	
Kent	......	......	......	1.44	12.0
Lampasas *[1]	78	13	46.0	2.21	2.0
Leakey†	75	29	54.2	1.30	
Llano *†[3]	77	25	47.5	1.10	
Longview†	78	16	46.0	7.44	......
Luling†	82	23	53.2	0.94	T.
McGregor†	74	15	43.4	1.72	2.5
Marshall†	79	12	47.0	7.66	2.6
Menardville *†[1]	76	15	45.7	0.85	1.0
Midland†	83	4	45.5	0.70	7.0
Mountain Spring†	80	5	42.5	1.25	10.0
Mount Blanco†	75	0	37.2	0.50	5.0
New Braunfels†	79	22	51.4	1.38	
Ochiltree				0.08	
Orange†	77	25	52.7	1.80	
Palestine	......	......	......	......	3.3
Panter *[1] c	76	11	41.1	1.75	12.2
Roby†	77	— 3	39.2	1.20	12.0
Rockport *[1]	74	30	55.5	......	
Rock Springs†	85	18	51.4	0.74	T.
Round Rock†	77	32	52.2	1.65	1.5
San Antonio	81	24	54.6	1.18	
San Marcos *a*†				1.30	
Sherman	78	15	43.4	2.64	8.0
Sierra Blanca	70	15	47.9	0.35	3.5
Stafford†	90	20	52.8	2.32	
Sulphur Springs†	80	8	37.8	4.58	2.0
Temple†	78	17	45.4	2.70	
Tyler†	78	15	44.6	0.44	0.5
Victoria†				0.85	
Waco†	79	20	46.6	2.29	
Weatherford†	77	11	42.0	1.81	16.0
Wichita Falls†	75	1	37.0	0.60	6.0
Utah.					
Alpine City†	......	......	......	2.17	21.0
Blue Creek *[5]	42	0	23.6	1.55	13.5
Brigham City	......	......	......	2.63	20.5
Castle Gate†	55	— 5	26.3	......	......
Cisco†	51	3	29.5	0.53	4.0
Corinne *[5]	45	— 6	24.2	1.30	13.0
Deseret†	45	— 8	24.6	0.40	......
Emery	......	......	......	3.90	39.0
Fillmore†	55	—16	25.4	1.93	......
Fort Duchesne†	43	—25	8.5	0.09	0.9
Glendale *†[1]	48[e]	6	25.8[e]	2.60	26.0
Green River†	34	5	18.2	0.75	0.2
Grouse Creek *†[1]	40	— 9	17.3	1.71	17.3
Grover†	44	—12	20.9	0.40	5.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Utah—Cont'd.	°	°	°	*Ins.*	*Ins.*
Heber†	48	—24	18.4	3.22	32.2
Huntsville†	......	......	......	3.85	11.0
Kelton *[5]	42	—12	18.8	0.30	3.0
Koosharem	47	—17	20.2	0.98	8.2
Levan†[2]	......	......	21.3	1.60	16.0
Loa†	51	—19	19.5	1.42	14.2
Logan†	42	—22[f]	19.6[e]	2.13	19.5
Manti†	40	—18	17.6	2.00	20.0
Millville†	......	......	......	2.09	......
Moab†	58	12	31.2	0.64	5.9
Mount Pleasant *†[1]	44	— 6	24.0	1.90	19.0
Ogden *a* *[5]	45	1	27.9	1.85	18.5
Ogden *b* *†[1]	53	3	29.8	2.61	20.0
Pahreah†	48	2	27.0	1.26	6.6
Parowan†	53	— 9	25.4	1.94	19.5
Promontory *[5]	48	— 3	25.2	0.80	8.0
Provo City†[2]	......	......	23.2	......	......
St. George†	60	10	34.1	1.99	5.5
Salt Lake City	......	......	......	......	13.0
Scipio†	......	......	......	0.58	......
Snowville†	41	—12	18.0	2.15	19.0
Soldier Summit†	39	—14	13.1	3.50	35.0
Terrace *[5]	46	—12	21.2	0.40	4.0
Thistle†	48	0	26.6	0.82	8.2
Vernal†	56	—10	21.0	1.00	8.5
Virgin City†	......	......	......	2.21	7.0
Vermont.					
Brattleboro	42	—24	19.0	2.73	21.0
Burlington†	43	— 9	22.1	1.31	16.0
Cornwall	52	—11	20.3	1.45	10.0
Enosburg Falls†	45	—20	18.8	1.70	8.5
Hartland†	41	—20	15.4	2.26	13.8
Irasburg†	42	—18	14.6	2.48	22.5
Jacksonville	42	—20	17.2	4.10	26.3
Northfield	......	......	......	......	16.8
Norwich *[6]	44	—14	17.2	1.53	12.5
St. Johnsbury	43	—18	15.7	1.89	16.0
Simonsville	45	— 5	16.4	1.80	......
Strafford *†[1]	38	—12	18.3	1.90	22.0
Vernon *[6]	39	—16	17.5	3.18	......
Wells	45	—15	20.6	1.38	9.5
Woodstock	43	—24	14.9	2.21	16.0
Virginia.					
Abingdon†	......	......	......	3.86	20.4
Alexandria	62	6	33.2	5.12	7.5
Ashland†	60	3	33.7	......	11.5
Avon†	60	— 4	32.0	5.00	25.0
Bedford City†	57	— 6	33.2	3.62	27.0
Big Stone Gap†	56	—17	29.0	6.83	17.0
Birdsnest *†[1]	65	19	37.6	3.95	1.6
Blacksburg	56	—13	28.5	6.29	21.3
Buchanan†	......	......	......	7.38	21.0
Buckingham†	61	— 1	32.3	5.37	14.0
Callaville†	67	6	37.9	3.56	6.0
Cape Charles†	64	19	39.0	3.10	......
Cape Henry	......	......	......	......	T.
Christiansburg†	......	......	......	4.96	24.0
Dale Enterprise†	56	—12	26.3	4.40	25.0
Grahams Forge	......	......	......	6.38	21.2
Hampton	65	15	39.5	3.87	2.0
Hot Springs	47	—18	26.6	4.59	28.2
Irwin†	62	3	33.2	......	10.5
Lexington†	50	—12	30.4	7.25	17.8
Lynchburg	......	......	......	......	20.2
Marion†	54	—12	31.1[e]	4.68	21.0
Monterey†	50	......	......	4.02	34.0
Norfolk	......	......	......	......	2.7
Nottoway	67	— 1	35.8	4.60	3.0
Petersburg†	68	5	37.2	3.90	4.1
Richmond (near)†	70	3	36.6	5.14	7.5
Richmond *b*†	......	......	......	5.09	5.6
Rocky Mount†	59	— 5	35.8	4.89	19.0
Salem†	60	— 6	34.7	6.73	20.0
Saltville	53	—12	30.2	......	......
Smithville†	60	0	34.4	5.38	5.7
Spottsville†	66	12	36.7	4.03	5.2
Stanardsville†	53	— 1	30.3	5.72	16.0
Staunton†	58	—13	29.3	5.97	23.0
Stephens City†	55	— 4	27.2	4.53	19.0
Sunbeam†	69	12	39.4	3.85	0.5
Warsaw†	65	8	34.4	4.83	9.5
Whittles Depot	61	3	35.0	6.98	10.0
Wytheville	58	—11	29.5	4.70	27.2
Washington.					
Aberdeen†	57	25	38.6	10.89	11.5
Anacortes	......	......	......	2.82	5.5
Ashford	......	......	......	7.05	28.8
Blaine†	59	16	33.1	6.97	11.0
Bridgeport†	50	1	22.5	1.75	5.0
Cascade Tunnel	41	11	25.6	13.04	123.0
Centerville†	45	— 5	26.0	3.85	38.5
Chehalis	55	21	36.3	4.00	2.0
Colfax†	46	3	29.0	3.31	24.0
Conconully†	46	— 2	24.0	0.75	4.5
East Clallam	......	......	......	......	15.0
East Sound†	59	21	37.8	3.36	11.0
Ellensburg†	41	— 6	22.0	2.37	22.7

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Washington—Cont'd.	°	°	°	*Ins.*	*Ins.*
Ellensburg (near)	46	2	24.6	2.75	21.0
Everett	54	23	36.8	4.48	8.2
Ferry†	55	19	36.2	8.09	14.0
Fort Canby	......	......	......	......	T.
Fort Simcoe	52	12	30.0	6.15	48.0
Fort Spokane	50	1	23.9	1.52	14.5
Fort Townsend	55	27	36.6	1.77	11.0
Grand Mound†	56	25	38.4	8.83	24.6
Hunters†	44	2	22.5	3.33	22.0
Index†	48	28	36.6	13.91	23.0
Kennewick†	62	11	31.2	1.35	10.6
Lakeside†	45	7	24.6	2.40	14.5
Lapush†	58	27	39.4	9.50	6.0
Madrone *†[1]	57	26	38.4	6.61	21.5
Moxee Valley†	52	5	26.5	4.89	43.2
Neah Bay	......	......	......	......	10.5
Oak Harbor	......	......	......	0.60	6.0
Olga†	58	23	39.1	2.89	7.5
Olympia†	......	......	......	......	17.0
Pine Hill *[1]	47	5	30.8	7.21	69.5
Port Angeles	......	......	......	......	15.0
Port Crescent	......	......	......	......	23.2
Pullman	44	4	27.4	4.06	29.0
Pysht	......	......	......	......	16.9
Rosalia†	47	4	26.2	2.57	14.8
Seattle	......	......	......	......	11.0
Silver Creek *[1]	52	23	36.8	7.73	19.5
Snohomish†	57	23	38.0	5.38	3.0
Spokane	......	......	......	......	19.5
Stampede†	48	14	30.0	9.62	74.5
Stillaguamish†	54	18	36.0	4.38	11.0
Sulphur	64	21	43.3	0.08	0.0
Sunnyside†	52	4	27.3	2.11	16.5
Tacoma†	60	23	38.2	7.36	0.4
Tatoosh Island	......	......	......	......	5.7
Union City†	56	30	38.4	12.25	27.0
Vashon†	56	......	......	5.30	12.5
Walla Walla	......	......	......	......	16.0
Waterville†	44	— 2	21.0	2.56	18.0
Wenatchee Lake†	47	1	24.4	......	24.0
West Ferndale†	60	23	35.5	3.34	3.2
West Virginia.					
Beverly†	58	—20	29.7	4.61	24.0
Bloomery†	42	— 7	23.1	3.70	15.8
Bluefield†	54	—17	28.6	5.75	23.0
Buckhannon *a*†	......	......	......	4.14	17.2
Burlington†	48	— 7	24.1	2.40	11.5
Charleston†	......	......	......	5.19	1.0
Cloverdale†	......	......	......	4.20	16.5
Elkhorn†	58	—10	32.5	4.64	20.0
Fairmont†	......	......	......	5.81	11.0
Forest Hill	52	—10	31.9	......	15.0
Glenville†	58	—10	28.4	4.90	8.0
Grafton†	57	—13	28.2	4.67	17.0
Green Sulphur	52	—20	29.6	3.30	14.0
Harpers Ferry†	......	......	......	4.23	15.0
Hinton *a*†	......	......	......	5.06	15.0
Hinton *b*†[1]	52	—11	30.3	......	......
Huntington	61	— 8	30.1	......	......
Lake	58	— 4	32.5	4.39	11.6
Leachtown†	......	......	......	5.65	9.5
Madison†	61	—11	30.9	6.08	16.9
Martinsburg†	49	— 2	26.4	2.45	10.5
Monarch *†[1]	60	— 6	32.2	6.53	19.0
Morgantown *a*†	......	......	......	4.74	......
Morgantown *b*†	69	—11	29.5	......	8.8
New Cumberland†	57	— 4	26.5	......	......
New Martinsville†	54	— 6	27.5	4.76	8.5
Nuttallburg†	60	—21	28.5	4.44	14.0
Parkersburg	......	......	......	......	12.1
Pennsboro	64[d]	—12[d]	27.7[d]	2.65	7.0
Philippi†	......	......	......	3.36	13.0
Pleasant Hill *[3]	55	—15	22.4	......	......
Point Pleasant†	59	— 6	29.2	4.98	13.0
Powellton†	56	— 5	28.5	5.18	26.5
Raleigh	50	—19	26.9	2.37	7.5
Rowlesburg†	......	......	......	2.98	11.0
Sandyville†	59	—13	28.3	4.90	11.0
Tannery *[1]	57	—12	26.6	......	13.8
Weston *a*†	......	......	......	5.86	12.4
Weston *b* *[1]	60	— 6	32.4	6.06	11.0
Wheeling *a*†	......	......	......	4.56	13.0
Wheeling *b*†	58	— 1	29.4	4.94	14.0
Wisconsin.					
Amherst	35	—17	10.0	1.97	19.7
Antigo†	33	—24	8.7	1.79	14.3
Apollonia *[1]	46	—26	8.8	1.35	7.5
Barron†[f]	35	—29	3.4	0.83	8.2
Bayfield	34	—23	7.1	2.30	23.0
Beaver Dam	42	—20	14.5	2.10	21.2
Belleville	42	—22	9.3	1.45	9.0
Beloit	46	—15	13.0	1.83	14.8
Berlin	40	—16	16.6	1.21	......
Black River Falls†	35	—30	9.0	0.80	8.2
Butternut†	33	—26	6.9	1.37	13.6
Centralia	35	—22	9.9	1.40	8.0
Chilton	41	—15	12.2	3.47	34.7

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Wisconsin—Cont'd.	°	°	°	*Ins.*	*Ins.*
Chippewa Falls†	......	......	......	1.17	15.0
City Point	35	—27	7.2	1.15	13.0
Columbus	40	—17	10.1	2.35	18.5
Crandon†	35	......	......	2.75	27.5
Delavan†	44	—18	11.4	1.00	......
Depere†	36	—15	12.5	2.70	23.4
Eau Claire	35	—22	8.5	0.98	10.0
Florence†	......	......	......	2.19	......
Fond du Lac†	42	—17	10.8	1.34	7.8
Grantsburg†	......	......	......	0.99	10.0
Green Bay	......	......	......	......	14.3
Hartford†	......	......	......	2.58	14.0
Harvey†	43	—18	13.2	1.46	8.0
Hayward†	31	—36	5.2	0.92	5.2
Hillsboro	38	—28	10.6	2.30	22.0
Janesville	42	—15	12.6	1.30	6.0
Koepenick *†[1]	38	—22	8.4	1.50	12.5
La Crosse	......	......	......	......	16.2
Lancaster†	44	—20	9.3	1.83	17.5
Lincoln[2]	......	......	15.8	2.18	13.0
Madison†	42	—14	11.0	1.12	......
Manitowoc†	41	—12	14.2	1.64	18.5
Meadow Valley†	35	—22	7.7	0.72	11.0
Medford†	35	—27	7.8	1.47	14.8
Menomonie	32	—28	2.5	1.23	9.3
Milwaukee	......	......	......	......	15.1
Neillsville†	36	—30	9.2	1.10	7.0
New Holstein†	40	—14	11.9	2.15	21.4
Oconomowoc†	43	—18	10.2	1.11	8.0
Oconto	37	—15	14.4	1.00	......
Osceola†	34	—35	2.6	0.86	13.0
Oshkosh†	48[d]	—12[e]	13.8[e]	2.42	24.2
Pepin	33	—34	4.2	0.65	9.0
Pine River†	37	—21	10.4	0.90	10.9
Portage†	......	......	......	2.04	16.5
Port Washington	50	—14	16.4	1.41	8.0
Prairie du Chien	44[g]	—24[g]	12.3[g]	1.45	17.5
Racine *[10]	37	—15	13.8	......	
Rhinelander†	35	—25	8.6	0.14	......
Royalton	36	—21	5.6	1.50	10.5
Sharon†	45	—16	12.1	1.20	12.0
Shawano	39	—16	15.3	1.13	10.5
Sheboygan *[9]	36	—15	14.6	......	......
Spooner†	38	—29	6.2	1.50	15.0
Stevens Point†	34	—24	10.0	1.09	18.3
Wisconsin—Cont'd.	°	°	°	*Ins.*	*Ins.*
Sturgeon Bay Canal *[9]	40	0	16.1	......	
Valley Junction†	37	—23	9.0	0.85	7.2
Viroqua	38	—20	9.0	1.55	13.0
Watertown†	38	—16	13.8	1.77	14.7
Waukesha[3]	42	—14*	11.4	1.55	9.2
West Bend	44	—10	17.6	2.00	10.2
Westfield†	37	—21	10.6	1.40	13.0
Weston *†[3]	......	—18	8.4	0.63	8.5
Whitehall	37	—30	6.4	......	......
Wyoming.					
Big Horn Ranch†	51	—20	19.3	0.45	4.5
Cheyenne	......	......	......	......	2.9
Fort Laramie†	59	—18	24.8	0.63	6.3
Fort Washakie	55	—25	19.2	0.18	1.8
Fort Yellowstone†	41	—23	18.6	4.76	47.6
La Barge†[1]	50	—40*	17.4	0.36	3.0
Lander	54	—24	19.8	0.80	8.0
Lander (W. B.)	......	......	......	......	6.8
Laramie	49	—14	20.5	0.08	......
Saratoga†	45	—28	17.2	0.70	7.0
Sheridan	53	—27	14.4	1.60	16.0
Sundance	43	—14	17.7	1.20	12.0
Mexico.					
Ciudad P. Diaz	85	28	57.2	0.22	
Leon de Aldamas	74	32	56.4	0.00	
Mexico	72	33	54.2	0.00	
Puebla	74	39	55.4	0.00	
Topolobampo *[1]	84	55	66.6	0.68	
New Brunswick.					
St. John	44	— 5	22.8	4.36	27.0

Reports received too late to be used in general discussion of weather for January, 1895.

Stations.	Maximum.	Minimum.	Mean.	Rain and melted snow.	Total depth of snow.
Arizona.					
Walnut Ranch *[1]	60	20	41.6	0.87	5.0
California.					
Tecarte Dam	......	......	......	19.24	......
Nebraska.					
Lincoln	65	—12	19.6	0.20	2.0

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

† Weather Bureau instruments.

‡ Record furnished by the Arrowhead Reservoir Company, in the San Bernardino Mountains, San Bernardino County, Cal., at elevations varying from 4,900 to 6,900 feet.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. ÷ 4.
[2] Mean of 8 a. m. + 8 p. m. ÷ 2.
[3] Mean of 7 a. m. + 7 p. m. ÷ 2.
[4] Mean of 6 a. m. + 6 p. m. ÷ 2.
[5] Mean of 7 a. m. + 2 p. m. ÷ 2.
[6] Mean of readings at various hours reduced to true daily mean by special tables.
[7] Mean from hourly readings of thermograph.
[8] Mean of 7 a. m. + 2 p. m. + 9 p. m. ÷ 3.
[9] Mean of sunrise and noon.
[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "n" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

Corrections: California. Dunsmuir, December, 1894, make total precipitation 29.30 instead of 15.80. California, Martinez, November, 1894, make mean temperature 52.0 instead of 62.0. April, 1894, page 169, in table of thunderstorms, make total for the District of Columbia 3 instead of 8.

NOTE.—The following changes have been made in the names of stations: New Jersey, Deckertown, changed to Pochunk Mountain. Washington, Elbe, changed to Ashford.

TABLE III.—*Data from Canadian stations for the month of January*, 1895.

Stations.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*	
St. John, N. F	29.82	29.97	+ .13	28.1	+ 4.5	3.23	....	n.
Sydney, C. B. I	29.90	29.96	+ .06	25.6	+ 6.1	5.85	+ 1.04	nw.
Halifax, N. S	29.85	29.99	+ .03	25.9	+ 4.9	10.12	+ 4.43	w.
Grand Manan, N. B	29.92	29.97	....	26.7	....	5.10	— 0.27	w.
Yarmouth, N. S	29.90	29.98	— .04	28.8	+ 3.3	5.93	+ 0.71	nw.
St. Andrews, N. B	29.90	29.95	....	22.1	....	5.40	+ 2.10	nw.
Charlottetown, P. E. I.	29.92	29.96	....	20.5	....	3.86	+ 0.45	w.
Chatham, N. B	29.94	29.96	— .06	11.1	+ 5.1	3.07	— 0.21	w.
Father Point, Que	29.93	29.96	— .06	12.2	+ 6.2	2.55	— 0.15	w.
Quebec, Que	29.62	29.98	— .08	12.4	+ 5.4	2.47	— 1.20	w.
Montreal, Que	29.76	29.99	— .09	14.2	+ 4.2	3.76	+ 0.48	sw.
Rockliffe, Ont	29.38	29.93	— .13	5.2	+ 1.7	3.20	+ 1.19	se.
Kingston, Ont	29.64	29.98	— .10	17.1	+ 2.1	3.04	— 0.22	w.
Toronto, Ont	29.57	29.98	— .11	20.9	+ 1.9	4.65	+ 2.14	sw.
White River, Ont	28.53	30.02	....	— 4.2	— 2.8	3.00	+ 1.67	n.
Port Stanley, Ont	29.32	30.00	— .10	19.6	....	4.67	+ 1.99	w.
Saugeen, Ont	29.18	29.94	— .12	20.2	+ 1.7	7.29	+ 3.83	w.
Parry Sound, Ont	29.18	29.93	— .15	13.5	+ 2.0	7.75	+ 4.60	e.
Port Arthur, Ont	29.22	29.98	— .12	3.5	+ 3.0	0.71	— 0.10	w.
Winnipeg, Man	29.20	30.09	— .09	— 9.2	+ 1.8	1.54	+ 0.88	nw.
Minnedosa, Man	28.10	30.11	— .05	— 8.8	+ 2.7	0.77	+ 0.14	nw.
Qu'Appelle, Assin	27.62	30.13	— .03	—10.2	— 2.2	0.88	+ 0.50	nw.
Medicine Hat, Assin	27.62	30.15	— .03	— 1.3	— 2.8	0.88	+ 0.55	w.
Swift Current, Assin	27.31	30.15	— .03	— 3.9	— 1.9	1.29	+ 0.68	w.
Calgary, Alberta	26.25	30.07	— .11	2.1	— 1.4	0.96	+ 0.39	nw.
Prince Albert, Sask	28.46	30.15	....	—11.6	....	1.72	....	nw.
Edmonton, Alberta	27.60	30.16	+ .04	— 1.8	— 3.0	0.83	+ 0.10	nw.
Battleford, Sask	28.22	30.16	....	—11.2	....	0.23	....	nw.
Spences Bridge, B. C	29.12	30.00	....	22.4	....	1.79	....	e.
Hamilton, Bermuda	30.00	30.16	+ .03	63.3	....	3.35	....	s.
Esquimault, B. C	29.82	29.85	....	37.4	....	6.85	....	n.
Banff, Alberta	25.14	30.07	....	8.1	....	1.07	....	w.

TABLE IV.—*Mean temperature for each hour of seventy-fifth meridian time, January, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex	38.3	37.6	37.2	36.2	35.5	34.6	34.3	33.9	33.7	35.1	38.6	41.7	44.7	47.0	48.4	50.0	51.0	50.6	48.7	45.8	43.1	41.0	40.1	39.0	41.1
Albany, N. Y	20.8	19.9	19.6	19.2	19.0	18.7	18.5	19.7	20.9	23.8	25.1	26.5	28.0	28.5	28.8	28.3	27.0	25.7	24.6	23.7	23.0	22.4	22.0	21.2	23.1
Alpena, Mich	15.9	15.6	15.2	15.1	15.2	15.1	14.9	14.5	15.1	16.4	18.4	19.8	20.8	21.5	22.2	22.2	21.8	21.2	20.6	19.3	18.7	18.1	17.2	16.7	18.0
Amarillo, Tex	28.7	28.4	27.3	26.6	26.5	26.1	25.3	25.4	24.5	26.2	30.0	33.4	36.4	39.6	41.8	43.2	43.7	42.4	39.1	36.4	34.0	32.0	30.5	28.8	32.3
Atlanta, Ga	38.8	38.3	38.1	37.6	37.2	37.1	36.8	36.7	36.9	37.3	39.0	41.0	42.0	43.3	44.4	45.0	45.0	44.5	43.4	42.5	41.7	41.0	40.4	39.9	40.3
Augusta, Ga	42.7	41.8	41.1	40.7	40.3	40.1	40.1	40.2	41.0	42.7	45.1	47.7	49.5	50.4	51.9	52.2	51.5	50.1	48.9	47.7	46.4	45.8	45.1	44.2	45.3
Baker City, Oreg	24.6	24.1	23.5	23.2	23.1	22.5	22.6	21.7	21.5	20.8	21.4	23.7	26.1	28.7	30.0	30.4	30.5	30.5	29.1	27.5	26.2	25.8	25.5	25.0	25.3
Baltimore, Md	30.0	29.4	29.1	28.8	28.9	28.8	28.6	28.5	29.0	30.0	31.3	32.6	33.5	34.1	34.3	34.3	33.9	33.3	32.8	32.1	31.8	31.3	31.1	30.8	31.2
Bismarck, N. Dak	−2.8	−3.6	−4.6	−5.2	−5.9	−6.5	−6.6	−6.4	−6.7	−5.7	−3.5	−0.5	2.0	3.9	5.5	6.5	6.8	5.6	3.1	1.9	0.4	−0.5	−1.5	−2.5	−1.1
Boston, Mass	26.0	25.8	25.6	25.4	25.1	24.8	25.1	26.2	26.9	28.4	29.9	32.0	33.1	33.9	33.9	33.1	32.3	31.3	30.2	29.3	28.5	27.8	27.3	26.5	28.7
Buffalo, N. Y	23.5	23.4	23.4	23.2	23.3	22.9	22.4	22.6	22.9	22.8	23.6	24.1	24.5	24.6	25.1	25.4	25.1	24.7	24.5	23.9	23.8	23.8	23.5	23.5	23.8
Charleston, S. C	46.9	46.7	46.5	46.8	46.0	45.2	44.8	44.7	45.8	47.5	49.5	51.3	52.6	53.6	53.8	53.7	52.5	50.5	49.6	49.1	48.9	48.5	48.2	47.6	48.7
Charlotte, N. C	36.5	36.0	35.5	35.0	34.6	34.5	34.1	34.3	35.2	36.8	38.6	40.6	41.9	43.1	43.8	44.3	43.9	42.5	41.5	40.5	39.5	38.8	38.0	37.4	38.6
Cheyenne, Wyo	21.9	21.7	21.6	21.5	21.9	21.5	21.5	21.4	21.6	21.9	24.3	27.4	29.1	30.0	30.9	31.8	30.5	29.8	27.3	25.5	24.0	23.3	22.7	21.9	24.8
Chicago, Ill	17.7	17.3	17.2	16.8	16.2	15.8	15.6	15.6	15.3	15.7	16.5	17.7	18.8	19.4	20.3	21.3	21.6	21.0	20.5	20.1	19.5	19.1	18.7	18.2	18.2
Cincinnati, Ohio	25.9	25.4	25.0	24.5	24.0	23.5	23.4	23.6	23.9	24.8	26.0	27.2	28.1	28.9	29.5	29.9	30.1	29.9	29.7	29.3	28.9	28.2	27.4	26.8	26.8
Cleveland, Ohio	22.0	21.6	21.3	20.8	20.5	20.3	19.9	20.0	20.2	20.6	21.4	22.4	23.4	24.3	24.8	25.2	25.0	24.4	23.9	23.7	23.4	23.1	22.7	22.5	22.4
Columbus, Ohio	23.6	22.9	22.3	21.6	21.2	21.0	20.8	20.8	21.4	22.4	24.0	25.4	26.5	27.8	28.3	28.4	28.2	27.4	27.1	26.6	26.3	25.5	24.8	24.3	24.5
Denver, Colo	26.8	26.3	25.6	24.5	24.3	24.4	24.3	24.0	23.6	23.9	25.7	29.6	32.4	34.1	35.2	35.5	35.6	34.5	32.3	30.7	29.4	27.8	27.1	26.8	28.5
Des Moines, Iowa	15.3	14.4	13.8	13.2	12.6	12.2	11.8	11.6	11.0	12.2	14.4	16.6	19.2	21.3	23.0	23.7	24.0	23.0	21.6	20.2	18.9	17.9	16.9	15.5	16.8
Detroit, Mich	18.8	18.5	18.4	18.2	17.7	17.4	17.4	17.5	17.7	18.7	20.5	22.2	22.9	23.5	24.0	23.0	22.4	21.7	21.3	20.8	20.2	19.8	19.1	18.8	20.0
Dodge City, Kans	23.8	23.8	23.3	22.9	21.9	21.5	20.7	19.9	19.5	20.7	23.9	27.5	29.3	30.9	32.5	33.9	34.2	33.4	31.4	29.0	27.1	25.9	25.1	24.2	26.1
Duluth, Minn	8.2	7.8	7.3	6.8	6.1	5.6	4.7	4.0	3.7	4.3	5.9	7.6	9.4	10.7	11.9	12.7	12.6	11.8	10.8	10.0	9.2	8.7	8.1	7.6	8.2
Eastport, Me	23.4	22.8	22.3	21.8	21.4	21.2	21.3	21.5	22.3	23.2	24.3	25.4	26.1	26.8	27.2	27.3	27.1	27.0	26.6	26.5	25.9	25.2	24.8	24.0	24.4
El Paso, Tex	43.4	42.6	41.3	40.3	39.3	38.0	37.1	36.6	36.1	36.3	38.5	42.2	46.1	49.2	51.4	53.1	54.4	54.7	54.1	50.5	48.5	46.6	45.1	43.7	44.6
Fort Smith, Ark	32.9	32.0	31.6	31.1	30.2	29.7	29.0	29.4	29.5	30.5	32.9	35.6	38.3	40.2	41.2	42.0	41.9	40.9	39.3	38.4	36.9	36.0	34.8	33.9	34.9
Galveston, Tex	52.4	52.2	52.2	52.1	52.1	51.6	51.2	50.7	50.7	51.5	52.7	53.7	54.6	55.2	55.5	55.6	55.5	55.2	54.7	54.5	54.4	53.7	53.4	52.8	53.3
Grand Haven, Mich	19.1	18.9	18.8	18.9	18.4	18.2	18.0	18.1	18.3	19.0	20.1	21.0	21.5	22.4	22.8	22.9	22.7	22.1	21.6	21.1	20.7	20.2	19.8	19.3	20.2
Havre, Mont	0.7	−0.4	−0.7	−1.0	−1.1	−1.5	−1.4	−1.0	−1.6	−1.9	−0.5	1.6	4.1	5.1	6.1	6.9	7.3	6.9	5.5	4.0	2.8	1.8	1.0	0.3	1.8
Helena, Mont	17.0	16.3	16.0	15.4	15.4	15.0	14.9	14.6	14.6	14.5	15.3	16.0	16.8	17.9	19.2	20.1	20.5	20.4	19.5	18.8	18.7	18.4	17.6	17.5	17.1
Huron, S. Dak	3.4	2.4	1.9	1.4	1.1	0.8	0.6	−0.1	0.3	1.0	3.1	6.0	8.0	9.6	10.9	11.4	11.2	10.3	8.6	7.2	5.7	4.8	3.7	2.9	4.8
Independence, Cal	34.8	34.5	33.9	33.6	33.2	33.6	33.6	33.5	33.1	33.3	33.3	36.2	38.3	40.6	42.7	44.5	45.2	45.1	43.5	40.7	38.8	37.6	37.4	36.4	37.4
Indianapolis, Ind	21.7	21.1	20.6	20.3	20.3	20.8	20.2	20.3	20.9	21.9	23.8	25.1	26.1	27.3	28.0	28.5	27.9	27.1	26.3	25.5	24.5	23.9	23.5	22.8	23.7
Jacksonville, Fla	52.0	51.5	51.4	50.9	50.7	50.3	50.3	50.4	51.6	53.7	56.2	58.1	59.9	60.9	61.5	61.3	60.1	58.0	56.9	56.1	55.0	54.3	53.7	53.1	54.9
Kansas City, Mo	23.6	22.6	21.4	20.7	20.1	19.5	19.0	19.0	18.6	19.1	21.0	23.7	26.2	28.1	29.6	30.6	30.7	30.1	28.8	27.7	26.4	25.4	24.5	23.8	24.2
Key West, Fla	67.3	67.4	67.4	67.2	67.1	66.9	66.9	67.7	68.8	69.9	71.3	72.0	72.2	71.9	72.0	71.6	70.6	69.2	68.7	68.5	68.4	68.1	68.0	67.8	69.0
Knoxville, Tenn	35.0	34.8	34.4	33.8	33.1	32.6	31.5	31.4	31.9	33.1	34.3	36.0	37.2	38.1	38.6	39.1	39.3	38.8	38.2	37.6	37.3	36.7	36.3	35.8	35.6
Lander, Wyo	13.6	12.4	11.6	10.7	10.5	9.6	8.9	8.0	8.1	8.2	11.5	18.6	23.9	27.0	28.0	28.9	28.9	27.6	24.8	21.0	19.2	16.9	15.4	14.3	17.0
Little Rock, Ark	35.2	34.6	34.5	33.9	33.5	32.9	32.6	32.5	32.8	33.7	35.8	37.9	39.1	40.5	41.9	42.6	42.7	42.1	41.0	40.4	39.2	38.2	37.2	36.2	37.1
Louisville, Ky	28.5	28.2	27.5	27.0	26.6	26.3	26.1	26.3	26.5	27.1	28.6	30.2	31.6	32.6	33.3	33.8	33.5	33.1	32.3	32.1	31.5	31.1	30.3	29.4	29.7
Lynchburg, Va	31.9	31.3	31.1	30.9	30.4	30.3	30.1	30.5	31.4	32.9	34.7	36.3	37.6	38.7	39.5	39.9	39.1	37.9	36.8	35.6	34.6	33.6	32.9	32.2	34.2
Marquette, Mich	13.9	13.4	13.3	13.1	12.6	12.3	12.2	12.2	12.1	12.7	14.0	15.7	17.3	18.5	19.1	19.2	18.8	17.3	16.2	15.0	14.4	14.0	13.7	13.4	14.8
Memphis, Tenn	36.6	36.1	35.5	35.2	34.8	34.6	34.4	33.9	34.1	35.0	36.4	38.4	39.8	40.8	41.4	41.8	41.9	41.5	40.7	39.8	39.3	38.8	38.1	37.4	37.8
Milwaukee, Wis	14.4	14.0	13.8	13.4	13.1	12.8	12.8	12.5	12.6	14.2	16.0	17.5	18.4	19.5	20.0	20.1	19.5	18.5	18.0	17.4	16.7	15.8	15.2	14.4	15.9
Montgomery, Ala	44.1	43.4	42.7	42.5	41.9	41.4	41.1	41.2	42.1	43.6	45.5	47.5	49.1	50.4	51.3	51.5	51.8	50.8	49.5	48.7	47.3	46.5	45.7	45.0	46.0
Moorhead, Minn	−2.3	−2.8	−3.3	−4.1	−4.5	−4.8	−5.4	−5.8	−6.5	−6.5	−4.5	−2.0	0.5	2.1	3.3	4.2	4.5	3.5	2.1	1.0	0.0	−1.2	−2.0	−2.7	−1.6
Nantucket, Mass	31.2	31.3	30.9	30.8	30.9	30.7	30.8	31.4	32.1	32.7	33.3	33.8	33.8	33.8	33.6	33.3	32.6	32.4	32.2	32.1	31.7	31.2	31.2	31.3	32.0
Nashville, Tenn	33.9	33.2	32.6	32.1	31.3	31.2	31.1	31.1	31.4	32.4	33.9	35.4	36.9	38.0	38.9	39.3	39.4	38.7	38.1	37.6	36.8	36.3	35.6	35.0	35.0
New Haven, Conn	25.1	24.7	24.7	24.7	24.5	24.2	24.2	24.7	25.3	26.9	28.5	29.5	30.3	30.8	31.0	30.6	29.6	28.8	28.0	27.2	26.6	26.3	25.8	25.4	27.0
New Orleans, La	49.9	49.6	49.2	48.9	48.5	48.5	48.6	48.5	48.4	49.7	52.4	54.5	55.6	56.2	56.1	56.7	56.6	55.9	54.5	53.2	52.3	51.6	51.0	50.5	52.0
New York, N. Y	27.8	27.8	27.8	27.6	27.6	27.8	28.3	28.3	28.9	29.8	30.9	31.6	32.0	32.1	31.1	31.8	31.2	30.4	30.1	29.4	29.0	28.9	28.6	28.5	29.5
Norfolk, Va	37.9	37.7	37.4	37.2	37.1	37.0	36.8	37.0	38.0	39.4	41.2	42.2	43.1	43.4	43.4	43.5	42.6	41.0	40.5	40.3	39,5	39.0	38.6	38.4	39.7
North Platte, Nebr	16.6	16.0	16.3	15.7	15.4	14.5	14.1	13.5	12.9	13.5	17.0	20.9	24.6	27.2	29.0	30.1	30.3	29.1	25.4	22.8	20.9	19.4	18.0	16.8	20.0
Omaha, Nebr	16.5	15.7	15.0	14.4	14.1	13.4	13.0	12.5	12.5	13.3	15.3	17.3	19.6	21.4	23.3	24.1	24.3	23.7	22.4	21.4	19.6	18.5	17.8	16.6	17.7
Parkersburg, W. Va	27.9	27.5	27.1	26.6	26.4	26.3	26.3	26.0	26.1	27.5	28.8	30.1	31.3	32.4	33.2	33.2	32.9	32.3	31.2	30.6	29.6	29.3	28.8	28.3	29.2
Philadelphia, Pa	29.3	29.2	28.9	28.9	28.7	28.4	28.3	28.8	29.5	30.1	31.4	32.3	32.9	33.3	33.4	33.3	32.7	31.9	31.3	31.0	30.5	30.2	29.9	29.6	30.6
Pittsburg, Pa	26.6	26.5	26.3	25.9	25.5	25.5	25.7	25.7	25.8	26.3	27.9	29.0	30.1	30.9	30.9	30.7	30.3	30.0	29.3	28.8	28.3	27.9	27.4	27.0	27.8
Portland, Oreg.*	37.5	37.2	36.6	36.8	36.5	36.2	35.8	35.8	35.6	35.5	35.5	35.8	36.5	37.2	38.0	38.9	38.9	39.2	39.0	38.8	38.4	38.4	38.1	38.0	37.3
Rapid City, S. Dak	14.7	14.1	13.2	12.5	11.7	11.5	11.7	12.4	12.2	13.4	15.4	18.4	21.0	22.0	22.9	23.4	23.0	21.5	19.8	18.9	17.5	17.0	16.2	14.8	16.6
Red Bluff, Cal	42.5	41.9	41.1	40.8	40.6	40.2	40.1	39.7	39.4	39.2	39.5	41.0	42.5	44.3	45.7	46.8	47.5	48.0	47.9	47.2	45.7	44.8	43.9	43.4	43.1
Rochester, N. Y	22.2	22.2	22.2	22.3	22.4	22.4	22.4	22.6	22.8	23.6	23.9	24.9	25.4	25.5	25.8	25.6	25.3	24.5	24.0	23.5	23.1	22.8	22.6	22.2	23.5
Roseburg, Oreg	38.1	37.7	37.3	37.4	36.8	36.5	36.4	36.1	35.9	35.9	35.7	36.1	37.9	39.5	41.2	42.8	44.1	44.5	44.3	43.7	41.6	40.5	39.5	38.5	39.1
St. Louis, Mo	25.6	25.3	24.6	24.0	23.9	23.4	22.7	22.1	22.0	22.6	24.0	26.0	27.6	29.4	30.5	31.0	30.8	30.2	28.9	28.0	27.5	26.9	26.4	26.0	26.2
St. Paul, Minn	6.2	6.0	5.4	4.9	4.2	3.8	3.2	3.0	2.5	2.2	3.2	4.8	6.7	8.5	9.7	10.5	10.7	10.4	9.6	8.7	7.8	7.0	6.5	6.0	6.3
Salt Lake City, Utah	27.2	26.8	26.5	26.4	26.3	26.3	25.7	26.3	25.7	25.8	26.3	28.1	30.1	31.6	32.3	32.7	33.3	33.2	31.8	30.0	29.5	28.6	27.8	27.5	28.6
San Diego, Cal	50.8	50.5	49.9	49.5	49.2	48.7	48.7	48.3	48.3	47.9	49.0	52.1	55.3	56.6	57.4	57.9	58.4	58.5	57.5	56.5	54.7	53.6	52.5	51.7	52.6
San Francisco, Cal	48.2	47.7	47.3	47.2	46.8	46.4	46.0	45.9	45.5	46.0	46.5	47.7	48.2	49.0	49.9	50.6	51.3	51.5	51.2	50.8	50.1	49.8	49.2	48.6	48.4
Santa Fe, N. Mex	25.5	25.0	24.5	23.8	23.5	23.1	23.4	23.1	22.6	23.2	27.0	29.2	31.4	32.3	33.3	33.6	34.5	34.0	32.5	29.7	28.0	26.7	26.2	25.8	27.6
Sault Ste. Marie, Mich	12.3	11.8	11.3	10.6	10.1	9.6	9.3	8.8	9.0	10.0	11.5	13.5	14.9	15.7	16.3	16.5	16.5	16.3	15.6	15.1	14.5	13.9	13.4	12.7	12.9
Savannah, Ga	47.3	47.2	46.9	46.7	46.1	45.6	45.1	44.8	46.2	48.6	51.1	52.9	54.3	55.6	56.3	56.0	54.9	52.8	51.4	50.9	50.3	49.7	49.0	48.3	49.9
Seattle, Wash	38.7	38.7	38.4	38.3	37.9	37.7	37.4	37.6	37.3	37.2	37.0	37.3	38.0	38.6	40.0	40.8	41.5	41.5	41.4	40.8	40.2	39.8	39.4	39.1	38.9
Shreveport, La	43.2	42.8	42.4	41.9	41.5	40.8	40.4	40.5	40.5	41.4	43.2	44.7	46.2	47.8	48.8	49.7	49.8	49.4	48.2	47.0	46.1	45.6	44.7	44.2	44.6
Spokane, Wash	26.6	26.4	25.8	25.5	25.3	24.9	24.7	24.8	24.5	24.4	24.6	25.5	26.9	28.8	29.6	30.9	31.4	31.5	31.0	30.3	29.3	28.5	27.5	27.2	27.3
Titusville, Fla	56.6	56.1	55.6	55.4	55.3	55.2	54.9	55.5	59.0	61.9	64.4	65.6	66.0	67.3	67.3	66.9	65.6	63.7	62.0	61.0	60.1	59.8	58.8	58.1	60.5
Toledo, Ohio	20.0	19.5	19.3	18,8	18.3	17.8	17.6	17.3	17.4	18.5	20.2	21.6	22.5	23.1	23.1	23.3	23.1	22.5	22.1	21.6	21.3	21.0	20.8	20.2	20.5
Tucson, Ariz	46.7	45.6	44.6	44.0	43.3	42.5	41.9	41.2	41.1	41.7	44.5	50.3	54.5	57.2	59.2	60.5	60.9	60.5	58.7	55.1	52.5	50.7	49.0	47.3	49.7
Vicksburg, Miss	45.1	44.5	44.3	43.7	43.0	42.5	42.5	42.0	42.3	43.5	44.5	45.9	47.9	49.1	50.4	51.5	51.7	50.8	49.4	48.6	47.7	46.8	46.1	45.8	46.2
Washington, D. C	30.3	29.7	29.2	28.8	28.5	28.1	28.0	28.5	29.7	31.3	32.6	33.8	34.7	35.4	36.0	35.8	35.4	34.5	33.8	33.1	32.5	32.3	31.6	31.0	31.9
Williston, N. Dak	−3.2	−3.8	−3.6	−3.6	−3.8	−3.6	−4.2	−4.5	−4.5	−4.2	−2.9	0.2	2.2	4.0	5.4	5.8	6.0	4.2	1.7	−0.1	−1.0	−1.9	−2.7	−3.4	−0.9
Wilmington, N. C	43.6	43.1	42.7	42.7	42.5	42.2	41.8	41.8	42.8	44.1	45.6	47.1	48.7	49.6	49.9	49.9	48.8	47.8	46.6	45.8	45.5	44.5	44.5	44.4	45.3
Winnemucca, Nev	23.7	23.2	22.4	21.6	21.5	20.2	19.6	19.5	19.0	18.5	18.6	20.5	23.6	26.5	28.9	30.5	31.5	31.7	31.3	29.9	27.7	26.3	25.3	24.5	24.4
Yuma, Ariz	51.0	50.3	49.4	48.1	47.9	47.5	47.5	47.4	46.8	46.9	50.2	54.4	57.4	59.7	61.4	62.7	63.3	63.3	62.7	59.9	56.9	54.7	52.9	51.8	53.9

* Record for 29 days.

TABLE V.—*Mean pressure for each hour of seventy-fifth meridian time, January, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex	28.236	.232	.233	.238	.240	.242	.244	.251	.260	.266	.272	.274	.253	.222	.198	.186	.178	.178	.181	.183	.198	.205	.224	.224	.226
Albany, N. Y	29.945	.953	.956	.951	.943	.945	.952	.959	.968	.968	.952	.932	.913	.910	.917	.923	.930	.941	.949	.955	.958	.957	.953	.948	.945
Alpena, Mich	29.223	.227	.235	.235	.231	.232	.240	.246	.253	.258	.254	.235	.217	.208	.206	.210	.217	.222	.225	.225	.238	.235	.233	.228	.230
Atlanta, Ga	28.871	.871	.874	.875	.872	.874	.883	.895	.909	.922	.929	.914	.888	.863	.854	.859	.861	.861	.868	.873	.875	.878	.877	.872	.880
Augusta, Ga	29.896	.903	.907	.906	.905	.909	.916	.927	.938	.946	.939	.921	.895	.879	.872	.875	.880	.883	.892	.900	.901	.905	.902	.899	.904
Baltimore, Md	29.846	.853	.853	.847	.846	.849	.860	.873	.883	.887	.876	.854	.837	.832	.835	.841	.848	.855	.865	.865	.868	.869	.862	.855	.857
Bismarck, N. Dak	28.198	.196	.200	.205	.205	.201	.198	.198	.205	.214	.216	.215	.202	.181	.166	.163	.166	.174	.182	.187	.189	.188	.192	.197	.193
Boston, Mass	29.881	.892	.891	.886	.882	.888	.894	.902	.908	.902	.882	.860	.842	.844	.849	.854	.864	.874	.885	.884	.891	.893	.887	.887	.880
Buffalo, N. Y	29.191	.195	.205	.198	.188	.189	.199	.211	.220	.228	.225	.212	.194	.188	.191	.197	.198	.204	.209	.214	.213	.212	.206	.197	.204
Charleston, N. C	30.068	.068	.068	.064	.065	.070	.081	.096	.113	.124	.125	.094	.074	.056	.047	.047	.050	.059	.066	.071	.075	.078	.078	.074	.076
Chicago, Ill	29.085	.084	.096	.097	.091	.087	.095	.102	.114	.120	.125	.114	.087	.074	.070	.075	.082	.085	.091	.096	.101	.100	.100	.098	.095
Cincinnati, Ohio	29.359	.361	.369	.369	.365	.369	.377	.389	.403	.411	.405	.385	.360	.349	.350	.350	.351	.355	.361	.366	.366	.364	.363	.361	.369
Cleveland, Ohio	29.169	.177	.185	.185	.183	.183	.186	.191	.198	.206	.202	.187	.169	.157	.158	.163	.169	.180	.183	.183	.175	.170	.166	.167	.179
Columbus, Ohio	29.143	.144	.150	.151	.148	.148	.159	.165	.175	.182	.182	.163	.142	.126	.131	.133	.140	.142	.147	.148	.149	.149	.145	.143	.150
Denver, Colo	24.623	.612	.607	.611	.613	.608	.603	.608	.611	.619	.633	.639	.636	.614	.594	.589	.591	.596	.605	.611	.619	.621	.621	.633	.613
Des Moines, Iowa	29.124	.125	.131	.134	.132	.125	.125	.130	.137	.149	.156	.154	.134	.112	.103	.105	.111	.113	.115	.124	.128	.130	.129	.130	.127
Detroit, Mich	29.158	.162	.170	.167	.167	.169	.175	.185	.194	.201	.200	.183	.161	.146	.145	.156	.162	.167	.171	.172	.171	.167	.164	.160	.170
Dodge City, Kans	27.369	.363	.365	.372	.370	.367	.362	.370	.381	.393	.406	.410	.395	.365	.346	.339	.340	.343	.347	.355	.364	.372	.378	.375	.369
Duluth, Minn	29.207	.210	.217	.222	.222	.218	.221	.226	.232	.231	.229	.223	.202	.188	.186	.193	.198	.204	.211	.217	.220	.216	.215	.215	.213
Eastport, Me	29.862	.870	.875	.874	.877	.888	.905	.921	.927	.923	.903	.883	.866	.862	.861	.859	.862	.863	.868	.868	.869	.866	.865	.860	.878
El Paso, Tex	26.204	.199	.196	.199	.200	.195	.192	.197	.207	.221	.230	.237	.222	.186	.159	.143	.138	.140	.144	.155	.169	.183	.193	.198	.188
Galveston, Tex	30.053	.046	.044	.043	.038	.039	.048	.061	.076	.092	.102	.095	.070	.042	.025	.016	.015	.017	.021	.031	.040	.047	.054	.049	.049
Grand Haven, Mich	29.240	.242	.251	.257	.256	.245	.250	.260	.266	.270	.271	.264	.240	.225	.224	.228	.233	.240	.242	.244	.247	.243	.243	.241	.247
Havre, Mont	27.316	.312	.309	.305	.306	.299	.289	.287	.307	.324	.339	.342	.337	.322	.307	.301	.300	.299	.295	.293	.297	.304	.305	.309	.309
Helena, Mont	25.688	.690	.689	.694	.705	.705	.705	.702	.709	.715	.723	.731	.727	.715	.696	.686	.686	.686	.688	.687	.689	.687	.687	.688	.699
Huron, S. Dak	28.627	.628	.629	.641	.642	.639	.636	.637	.633	.641	.650	.652	.634	.618	.605	.606	.610	.614	.617	.624	.623	.623	.625	.630	.628
Independence, Cal	25.988	.987	.978	.978	.983	.976	.967	.961	.967	.980	.991	.007	.019	.009	.978	.958	.946	.950	.948	.954	.959	.968	.976	.981	.975
Indianapolis, Ind	29.184	.185	.191	.193	.191	.191	.199	.211	.224	.232	.229	.222	.202	.186	.180	.178	.178	.181	.188	.189	.190	.191	.191	.187	.195
Jacksonville, Fla	30.049	.050	.050	.050	.049	.056	.073	.088	.103	.112	.100	.080	.043	.029	.023	.022	.030	.037	.049	.058	.064	.065	.060	.052	.058
Kansas City, Mo	29.050	.047	.049	.051	.052	.045	.045	.052	.061	.081	.089	.089	.065	.041	.024	.027	.030	.033	.038	.049	.055	.057	.056	.056	.052
Key West, Fla	30.098	.092	.084	.081	.079	.082	.098	.114	.133	.141	.137	.120	.093	.073	.065	.064	.069	.075	.085	.096	.104	.107	.107	.100	.096
Knoxville, Tenn	29.026	.022	.027	.029	.025	.023	.025	.035	.051	.066	.067	.056	.030	.010	.008	.004	.007	.012	.016	.022	.028	.032	.031	.026	.028
Little Rock, Ark	29.772	.766	.770	.772	.769	.764	.765	.777	.788	.802	.810	.800	.769	.745	.736	.734	.735	.741	.747	.755	.763	.769	.773	.771	.766
Louisville, Ky	29.478	.476	.484	.487	.485	.485	.496	.505	.521	.528	.526	.511	.485	.465	.460	.462	.464	.467	.475	.475	.478	.480	.482	.481	.486
Lynchburg, Va	29.314	.319	.323	.320	.317	.322	.330	.334	.345	.351	.342	.319	.293	.286	.288	.291	.296	.307	.317	.325	.326	.324	.323	.316	.318
Marquette, Mich	29.097	.100	.107	.107	.098	.094	.096	.099	.101	.102	.103	.096	.080	.068	.071	.080	.090	.093	.100	.105	.110	.111	.106	.105	.097
Memphis, Tenn	29.753	.754	.756	.755	.751	.751	.757	.766	.776	.785	.789	.782	.753	.729	.719	.720	.723	.729	.738	.743	.747	.751	.752	.750	.751
Milwaukee, Wis	29.231	.230	.243	.250	.245	.240	.245	.252	.258	.266	.268	.257	.237	.226	.223	.228	.231	.234	.233	.238	.237	.236	.233	.230	.240
Moorhead, Minn	29.009	.009	.012	.020	.021	.015	.015	.015	.017	.025	.033	.036	.024	.005	.998	.001	.008	.008	.008	.012	.009	.006	.010	.011	.014
Nantucket, Mass	30.009	.016	.023	.019	.015	.015	.022	.033	.033	.030	.013	.986	.974	.971	.972	.974	.977	.987	.997	.012	.014	.016	.018	.017	.006
Nashville, Tenn	29.477	.481	.489	.490	.492	.494	.503	.511	.517	.524	.524	.505	.472	.456	.448	.448	.455	.460	.468	.478	.480	.480	.479	.476	.484
New Haven, Conn	29.916	.923	.923	.915	.909	.914	.921	.933	.936	.934	.919	.895	.878	.876	.882	.886	.896	.907	.919	.927	.933	.932	.930	.925	.914
New Orleans, La	30.033	.030	.027	.023	.016	.015	.021	.033	.052	.066	.066	.051	.029	.008	.997	.996	.001	.006	.015	.028	.037	.042	.039	.032	.028
New York, N. Y	29.848	.850	.847	.838	.833	.839	.847	.857	.865	.867	.853	.833	.819	.817	.822	.830	.839	.848	.859	.867	.870	.867	.863	.857	.847
Norfolk, Va	30.003	.007	.008	.004	.000	.007	.022	.036	.047	.052	.041	.015	.993	.983	.983	.985	.995	.000	.010	.016	.023	.023	.021	.009	.012
Omaha, Nebr	28.868	.870	.875	.879	.878	.875	.874	.883	.891	.898	.905	.902	.886	.861	.848	.849	.853	.854	.862	.871	.873	.875	.877	.878	.874
Parkersburg, W. Va	29.358	.360	.368	.371	.365	.364	.373	.385	.400	.409	.409	.392	.363	.353	.349	.350	.351	.355	.363	.366	.365	.368	.365	.359	.369
Philadelphia, Pa	29.926	.926	.928	.923	.918	.924	.933	.947	.959	.962	.948	.926	.911	.910	.915	.919	.930	.939	.947	.952	.955	.951	.945	.936	.935
Pittsburg, Pa	29.105	.107	.115	.116	.115	.114	.121	.126	.129	.133	.126	.118	.095	.081	.080	.087	.091	.098	.108	.116	.118	.117	.112	.108	.110
Portland, Oreg	29.753	.755	.752	.751	.762	.766	.765	.758	.758	.758	.769	.779	.786	.778	.768	.758	.756	.755	.750	.747	.748	.749	.749	.749	.739
Rochester, N. Y	29.387	.390	.395	.394	.389	.386	.393	.393	.404	.407	.407	.392	.384	.381	.382	.388	.392	.399	.401	.398	.397	.395	.394	.387	.394
Roseburg, Oreg	29.315	.324	.328	.328	.333	.336	.335	.327	.321	.318	.321	.331	.340	.339	.330	.317	.303	.299	.296	.290	.293	.297	.300	.300	.318
St. Louis, Mo	29.471	.472	.479	.480	.474	.469	.472	.484	.497	.509	.504	.491	.466	.443	.438	.444	.447	.452	.464	.472	.475	.477	.478	.474	.472
St. Paul, Minn	29.102	.099	.102	.110	.109	.104	.100	.107	.111	.124	.131	.133	.115	.097	.088	.093	.096	.104	.107	.115	.117	.116	.113	.118	.109
Salt Lake City, Utah	25.606	.605	.599	.599	.606	.600	.591	.589	.592	.600	.607	.617	.616	.603	.578	.573	.578	.581	.587	.588	.594	.602	.604	.604	.597
San Diego, Cal	29.948	.948	.942	.942	.941	.935	.930	.927	.934	.942	.960	.973	.981	.968	.944	.927	.919	.918	.921	.923	.928	.935	.942	.944	.941
San Francisco, Cal	29.862	.863	.859	.859	.861	.860	.851	.845	.845	.854	.864	.879	.887	.877	.854	.836	.827	.827	.825	.825	.828	.833	.840	.851	.850
Santa Fe, N. Mex	23.180	.177	.175	.176	.178	.173	.166	.165	.166	.172	.179	.190	.184	.167	.149	.140	.139	.144	.146	.155	.160	.165	.171	.174	.166
S'lt Ste. Marie, Mich	29.138	.140	.150	.155	.156	.157	.168	.179	.189	.194	.193	.178	.149	.138	.133	.133	.135	.142	.151	.152	.153	.152	.150	.146	.155
Savannah, Ga	29.995	.997	.000	.001	.998	.006	.019	.036	.049	.058	.053	.031	.002	.983	.973	.972	.974	.980	.991	.997	.002	.005	.002	.996	.005
Seattle, Wash	29.736	.733	.732	.735	.745	.745	.743	.742	.741	.745	.752	.757	.757	.751	.744	.739	.736	.737	.736	.733	.732	.731	.731	.733	.740
Spokane, Wash	27.890	.891	.886	.886	.894	.891	.883	.878	.877	.881	.890	.899	.899	.892	.876	.871	.870	.877	.880	.881	.879	.880	.881	.884	.884
Toledo, Ohio	29.237	.239	.245	.246	.244	.245	.252	.262	.278	.285	.284	.268	.248	.237	.243	.248	.251	.255	.258	.257	.254	.251	.247	.239	.253
Vicksburg, Miss	29.809	.806	.807	.807	.799	.794	.803	.817	.831	.842	.849	.832	.808	.786	.778	.778	.780	.784	.790	.797	.802	.808	.808	.807	.805
Washington, D. C	29.937	.940	.943	.940	.937	.940	.949	.963	.977	.986	.980	.961	.941	.931	.932	.937	.941	.946	.956	.957	.959	.960	.952	.944	.950
Wilmington, N. C	30.001	.003	.003	.000	.003	.015	.031	.040	.050	.056	.049	.019	.993	.987	.986	.989	.993	.999	.003	.011	.012	.014	.009	.003	.011
Yuma, Ariz	29.881	.879	.876	.878	.876	.874	.871	.870	.882	.891	.909	.919	.918	.899	.870	.853	.845	.845	.845	.849	.858	.865	.872	.876	.875

TABLE VI.—*Average wind movement for each hour of seventy-fifth meridian time, January, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex	8.2	8.8	8.5	8.9	9.0	8.8	7.9	7.9	8.0	8.1	9.8	10.3	9.9	10.1	10.5	9.8	9.8	9.7	8.6	7.2	6.3	6.5	7.3	8.1	8.7
Albany, N. Y	6.7	6.8	6.6	6.0	6.3	6.8	6.4	6.3	7.1	7.9	8.9	8.8	9.0	8.7	8.9	8.2	7.9	6.5	6.4	6.3	6.6	6.5	6.7	6.5	7.2
Alpena, Mich	10.3	10.5	10.6	10.7	10.4	10.5	10.5	10.0	10.4	11.1	12.3	12.5	12.8	13.5	12.9	12.7	12.3	11.1	10.9	11.0	10.9	11.0	10.8	10.5	11.3
Amarillo, Tex	16.1	16.2	16.3	15.6	14.6	15.4	15.6	14.5	14.6	14.3	14.7	16.6	18.2	18.5	20.0	19.5	19.1	19.0	17.7	16.8	17.3	17.4	17.0	15.8	16.7
Atlanta, Ga	11.1	11.5	11.3	10.6	10.0	9.8	10.6	10.3	11.5	11.7	12.0	11.5	11.9	12.0	11.4	11.5	11.1	10.0	9.6	10.0	10.0	10.2	10.1	10.6	10.8
Augusta, Ga	4.0	4.4	4.6	4.5	4.5	4.6	4.8	4.5	5.2	5.7	6.3	6.5	7.0	6.5	6.9	7.4	7.0	6.1	5.3	4.4	4.1	3.5	3.8	4.2	5.2
Baker City, Oreg	6.8	6.8	6.1	6.3	6.4	6.9	6.7	5.8	6.0	6.1	6.2	6.3	6.1	5.2	5.7	5.9	6.0	6.0	5.7	5.3	5.2	6.0	6.1	6.8	6.1
Baltimore, Md	6.7	6.7	6.6	6.5	6.4	6.3	6.9	6.3	7.5	8.5	9.6	9.9	10.9	11.2	11.4	10.5	9.5	8.2	7.9	7.7	7.7	7.5	7.1	6.5	8.1
Bismarck, N. Dak	8.0	8.3	8.1	7.7	7.9	7.7	6.7	7.4	7.1	7.4	8.0	9.1	11.1	11.6	12.2	12.5	12.0	10.5	8.8	7.4	7.8	8.7	9.3	8.4	8.9
Block Island, R. I	17.4	18.3	19.0	18.8	18.4	17.5	17.6	18.3	17.4	17.2	17.0	17.2	17.2	17.2	17.7	17.6	17.4	17.7	17.5	17.7	18.7	18.3	17.0	16.2	17.7
Boston, Mass	10.5	10.1	9.8	9.5	9.8	10.3	10.9	11.3	11.5	11.7	12.2	11.4	12.0	12.3	12.7	12.4	11.6	10.9	11.2	10.7	11.2	11.6	11.1	10.6	11.1
Buffalo, N. Y	16.4	15.6	15.5	15.5	15.6	15.0	15.5	15.1	15.4	15.7	16.5	17.1	16.8	16.4	16.9	17.6	16.7	17.1	17.0	16.4	15.7	16.0	16.3	15.9	16.2
Cairo, Ill	10.3	10.6	9.9	10.2	9.5	10.2	9.8	9.9	9.9	10.6	11.1	11.4	11.2	12.5	11.7	12.2	11.9	10.8	9.6	11.0	10.5	10.5	10.4	10.3	10.7
Cape Henry, Va	13.3	13.8	13.9	14.3	14.0	14.3	14.2	14.5	15.1	15.5	14.7	15.1	15.6	15.4	15.5	15.8	14.5	13.1	13.2	13.1	13.8	14.2	12.7	12.9	14.3
Charleston, S. C	6.7	7.2	6.9	7.4	7.2	7.7	7.5	7.5	7.8	8.6	9.0	9.4	9.4	9.5	9.3	9.1	8.6	7.4	7.1	6.8	6.3	7.0	6.8	6.6	7.8
Charlotte, N. C	6.6	6.8	6.2	6.0	6.4	6.6	7.0	7.0	7.3	7.9	8.9	9.3	9.5	10.4	10.0	9.7	8.4	7.3	7.1	7.2	7.4	7.4	7.3	7.2	7.7
Chattanooga, Tenn	7.3	7.3	6.9	7.2	7.1	7.7	8.3	7.4	7.4	8.2	9.1	8.7	9.3	9.2	9.4	10.5	10.6	9.2	8.7	8.5	7.3	7.3	7.3	7.1	8.2
Cheyenne, Wyo	9.3	10.5	10.6	10.6	10.9	11.5	12.2	13.4	14.2	13.6	12.7	14.2	16.2	17.5	17.2	17.8	18.5	17.0	13.8	11.1	11.3	12.1	11.0	10.5	13.2
Chicago, Ill	16.8	16.7	17.1	17.1	17.6	17.2	17.0	16.6	16.8	17.4	17.7	17.7	19.7	18.9	19.2	19.3	20.4	19.6	19.1	19.4	19.3	18.6	17.2	17.1	18.1
Cincinnati, Ohio	8.9	8.6	8.6	8.2	8.5	8.4	8.2	8.2	8.4	9.0	8.8	9.4	10.1	10.0	10.4	9.7	9.4	9.1	9.1	8.7	8.6	8.9	8.5	8.8	8.9
Cleveland, Ohio	14.4	14.3	14.1	13.1	14.0	13.9	14.5	15.0	15.1	15.5	16.3	15.7	16.3	16.3	15.5	15.1	15.2	15.2	14.7	14.7	14.3	14.5	14.4	14.5	14.9
Columbia, Mo	6.8	7.0	6.7	7.1	7.3	7.2	6.8	6.5	6.7	7.4	8.2	8.9	9.2	9.1	9.8	9.5	9.2	7.9	6.7	6.7	6.9	6.9	6.9	7.0	7.6
Columbus, Ohio	7.6	7.7	8.2	8.8	8.8	8.8	8.0	8.3	8.8	8.9	9.3	9.1	9.3	9.3	9.2	9.0	8.2	8.0	7.6	8.1	8.0	7.8	7.8	7.5	8.4
Concordia, Kans	5.9	5.6	5.8	6.3	5.9	6.2	6.1	6.0	6.2	6.5	7.5	8.9	9.5	10.4	11.0	10.8	10.8	8.9	6.8	6.4	6.5	6.1	6.4	6.2	7.4
Corpus Christi, Tex	11.6	11.5	11.5	11.7	11.5	11.0	11.2	10.5	9.6	9.8	10.9	12.2	12.8	13.1	12.8	13.1	14.1	13.2	11.8	11.0	10.5	11.4	12.0	11.5	11.7
Davenport, Iowa	9.0	8.6	8.9	8.5	8.2	8.1	8.9	9.1	9.3	9.5	10.7	11.2	11.9	12.7	13.2	13.4	13.6	12.6	11.1	10.2	10.2	9.8	10.1	9.6	10.3
Denver, Colo	7.8	7.6	7.4	6.4	6.8	7.1	6.8	6.7	7.7	7.6	7.5	7.1	7.8	8.2	8.6	9.4	9.8	10.0	9.2	7.5	7.5	7.0	7.1	8.2	7.8
Des Moines, Iowa	6.7	7.5	7.4	7.3	7.5	7.2	7.1	7.2	7.6	8.0	8.9	9.6	10.2	11.1	11.2	11.4	10.7	10.0	8.7	8.5	8.4	8.0	7.6	7.4	8.5
Detroit, Mich	11.5	11.7	10.8	10.6	11.1	11.5	11.4	11.7	11.7	12.5	13.5	15.4	15.5	15.6	15.7	15.1	14.0	13.3	12.7	13.1	13.0	12.7	12.1	11.8	12.8
Dodge City, Kans	8.7	8.8	8.7	8.9	9.1	8.5	8.3	7.6	8.5	9.2	10.5	12.4	13.3	13.7	13.5	13.5	12.7	11.8	10.6	10.1	9.9	9.5	9.2	9.0	10.2
Duluth, Minn	6.2	6.1	6.0	6.3	6.6	7.5	7.2	7.1	7.5	8.1	8.9	9.1	9.6	9.7	9.6	8.8	8.5	8.0	7.7	8.6	8.3	8.0	7.7	7.5	7.9
Eastport, Me	12.5	12.0	11.5	12.0	12.3	12.5	11.8	12.2	12.5	12.7	13.2	13.5	12.8	12.7	12.6	12.4	12.3	12.7	11.4	11.8	11.8	11.5	11.8	12.2	12.3
El Paso, Tex	11.6	11.2	11.3	10.9	10.4	9.1	8.4	8.7	9.0	9.5	8.8	9.2	11.1	12.7	14.2	15.6	16.5	16.5	14.6	12.1	12.8	12.4	11.2	10.5	11.6
Erie, Pa	13.5	13.3	12.6	13.8	13.7	13.1	13.7	13.1	13.5	13.9	14.0	13.6	14.5	14.5	13.9	13.2	12.1	11.8	12.0	12.3	13.2	13.3	14.3	13.9	13.4
Eureka, Cal	6.0	5.9	5.9	6.3	6.9	7.0	5.9	5.8	6.3	6.8	7.2	7.8	7.5	7.8	8.6	8.8	9.4	9.2	9.5	9.9	8.3	7.9	7.1	5.8	7.4
Fort Canby, Wash	18.9	18.3	19.0	19.5	19.0	19.0	18.6	18.7	19.1	19.5	19.8	18.9	19.4	18.2	17.6	17.5	17.0	16.5	17.0	17.0	17.7	19.3	19.2	20.4	18.5
Fort Smith, Ark	6.9	7.6	7.7	7.2	6.7	6.7	6.4	6.6	6.7	7.5	8.5	8.0	7.9	8.9	9.0	8.6	9.0	8.1	7.5	7.9	7.5	7.5	7.5	7.8	7.7
Fresno, Cal	5.1	5.1	5.1	5.0	5.2	5.2	4.6	4.4	4.7	4.7	4.1	3.4	4.1	4.8	5.5	6.1	6.4	6.2	6.1	5.8	5.5	5.7	5.5	5.1	5.1
Galveston, Tex	13.7	13.5	13.1	12.1	12.0	12.5	13.2	13.5	13.5	13.2	12.9	13.1	13.4	13.5	13.3	13.2	13.4	12.8	12.2	12.6	13.2	14.0	14.5	14.5	13.2
Grand Haven, Mich	12.7	12.2	12.1	11.9	11.6	11.7	11.8	11.4	11.1	11.2	11.8	12.7	13.4	13.7	13.6	13.5	14.2	13.6	13.5	13.3	13.3	13.5	13.1	13.0	12.7
Green Bay, Wis	10.2	9.4	9.5	9.0	9.1	9.2	8.7	8.3	8.0	8.3	9.2	9.8	9.8	10.1	10.5	10.5	10.7	11.0	10.2	10.6	10.3	10.3	10.9	10.6	9.8
Hannibal, Mo	9.1	9.0	9.0	8.0	8.4	8.9	8.6	8.4	8.5	8.5	9.7	10.5	10.9	11.4	11.1	11.5	11.1	9.3	7.6	7.7	8.6	8.6	8.9	9.1	9.3
Harrisburg, Pa	6.4	6.5	6.8	6.3	6.3	6.1	6.3	6.2	6.3	7.0	7.8	9.2	9.8	10.2	9.9	9.5	8.9	7.8	7.9	7.8	7.0	6.7	6.3	6.6	7.5
Hatteras, N. C	15.5	15.7	15.2	15.5	15.2	15.3	15.6	15.2	15.3	15.3	15.9	15.1	15.0	16.0	15.9	15.8	15.5	14.9	14.0	14.2	14.4	14.5	14.9	15.4	15.2
Havre, Mont	7.6	7.8	7.5	8.1	8.1	7.8	7.6	7.3	7.3	7.5	7.3	7.1	8.3	9.3	10.5	10.2	9.2	8.7	7.7	7.7	7.6	7.7	8.0	8.2	8.1
Helena, Mont	4.5	3.7	3.6	3.4	4.4	4.3	4.9	5.0	4.4	4.2	3.7	4.5	6.1	5.9	5.9	6.1	5.4	5.6	4.2	4.4	4.4	4.7	4.3	4.9	4.7
Huron, S. Dak	10.7	11.3	11.7	11.6	12.9	13.5	12.7	12.6	11.9	12.7	13.3	14.7	15.3	15.5	15.3	14.5	13.5	11.9	10.5	10.5	10.4	10.5	10.3	11.2	12.5
Idaho Falls, Idaho	8.4	7.7	8.1	7.9	7.2	6.3	6.8	7.1	7.2	7.4	6.8	7.3	7.1	7.6	8.2	8.1	7.7	7.3	7.6	7.6	8.4	8.1	8.5	8.2	7.6
Independence, Cal	8.0	7.9	8.3	8.1	8.5	8.3	8.3	9.1	9.7	9.3	9.3	9.0	9.2	9.6	9.9	9.9	9.6	8.5	7.8	7.1	8.4	8.0	7.3	8.5	8.6
Indianapolis, Ind	7.7	7.7	7.8	8.0	7.6	7.4	7.1	7.5	7.6	8.1	8.1	7.9	8.1	7.8	8.1	8.0	7.9	7.5	7.2	7.4	7.4	7.5	7.7	7.9	7.7
Jacksonville, Fla	5.9	5.9	6.3	7.1	6.8	6.2	6.4	6.3	6.2	7.3	7.8	8.4	8.6	9.0	9.4	9.2	8.9	8.5	7.5	7.4	6.9	5.8	6.1	6.1	7.3
Jupiter, Fla	7.9	8.3	7.8	8.0	7.6	7.7	7.5	7.3	8.3	10.1	11.1	12.0	12.6	13.3	13.3	12.8	11.3	9.0	8.0	7.5	7.3	7.0	7.0	7.3	9.2
Kansas City, Mo	8.1	7.8	7.8	8.0	7.4	7.4	7.0	7.4	7.8	7.9	8.5	8.9	9.4	9.4	9.6	9.8	9.3	8.7	7.8	8.3	8.6	8.5	8.4	8.2	8.3
Keokuk, Iowa	7.8	7.7	7.8	8.0	7.7	7.8	8.0	8.1	8.0	8.1	8.3	8.7	9.7	10.3	10.6	11.0	10.4	9.1	7.5	7.0	6.9	7.5	7.7	7.7	8.4
Key West, Fla	7.8	8.0	8.2	8.3	8.0	8.0	7.3	7.5	8.1	8.6	9.0	9.2	9.0	8.6	8.5	8.3	8.6	8.6	7.4	7.1	7.8	8.3	8.0	7.5	8.2
Kittyhawk, N. C	15.9	14.5	14.9	14.4	14.5	14.5	14.3	15.4	15.7	16.3	16.4	16.1	17.6	17.5	17.8	17.2	16.4	15.4	15.3	15.5	15.5	15.1	15.2	15.7	15.7
Knoxville, Tenn	5.3	5.5	5.7	5.5	5.5	6.0	6.1	6.0	6.2	7.2	7.6	7.5	7.5	8.2	7.7	8.3	7.4	6.7	5.9	5.5	5.6	5.6	5.0	4.6	6.3
La Crosse, Wis	7.0	6.8	6.4	6.5	6.8	6.7	6.9	6.8	6.5	7.0	7.1	7.9	8.2	9.1	9.1	9.3	9.0	8.0	7.7	8.1	7.7	7.7	7.6	6.9	7.5
Lander, Wyo	4.1	4.0	3.9	3.5	3.5	3.4	2.5	2.5	2.7	2.6	2.8	3.0	4.3	5.4	5.5	5.9	5.6	5.5	5.5	4.3	3.8	3.7	4.1	3.6	4.0
Lexington, Ky	14.9	15.7	15.8	15.3	15.0	15.2	13.9	14.6	14.5	14.7	15.3	15.4	14.3	15.7	16.9	15.5	15.1	14.5	13.4	14.6	15.0	14.8	15.3	15.3	15.0
Little Rock, Ark	6.7	7.4	7.8	7.2	7.5	7.7	7.3	7.1	7.1	7.6	8.4	8.1	9.6	10.2	10.1	9.6	9.4	9.2	8.2	7.8	8.1	7.9	7.4	7.2	8.1
Los Angeles, Cal	3.3	3.5	3.7	3.7	3.9	4.3	4.2	3.9	4.3	3.9	4.4	4.8	4.6	4.5	4.3	4.1	4.5	4.3	4.2	3.9	2.7	2.5	2.3	2.7	3.9
Louisville, Ky	9.5	9.5	10.1	9.7	9.3	9.2	8.6	8.8	9.3	9.9	10.4	10.4	10.7	11.0	10.6	10.7	10.9	10.4	10.8	9.9	10.6	10.7	10.7	9.9	10.1
Lynchburg, Va	3.2	2.9	3.0	3.3	3.4	3.6	4.0	4.2	4.6	4.8	5.5	5.9	6.5	6.7	6.7	6.5	5.8	5.1	4.4	4.0	3.7	3.3	2.6	2.9	4.4
Marquette, Mich	12.9	13.0	12.4	12.4	13.2	12.6	12.2	12.4	12.4	11.7	11.9	11.9	11.6	11.1	12.0	11.9	11.3	9.9	9.9	10.6	11.7	12.8	13.3	13.9	12.0
Memphis, Tenn	8.4	7.7	8.2	8.3	8.4	7.7	7.7	7.7	7.7	8.7	9.1	9.3	9.7	9.3	9.8	9.4	8.9	8.8	8.0	7.9	8.4	8.1	7.9	8.4	8.5
Meridian, Miss	8.1	8.1	7.7	8.3	8.2	7.3	6.3	6.5	6.3	6.1	7.0	6.8	7.1	6.5	6.3	5.5	5.8	6.1	6.4	6.6	6.7	7.3	8.0	7.8	6.9
Miles City, Mont	5.0	4.8	5.3	5.1	5.3	5.5	5.5	4.6	4.8	4.8	4.8	5.2	6.1	6.4	6.4	6.6	7.0	6.2	5.5	4.9	5.2	5.7	5.6	4.7	5.5
Milwaukee, Wis	12.2	11.5	10.8	10.2	9.9	10.3	10.5	10.5	10.3	10.8	12.4	12.9	14.0	14.1	14.0	13.8	13.5	12.3	12.6	12.6	13.4	13.0	12.2	12.1	12.1
Mobile, Ala	7.9	8.2	8.4	8.3	7.6	7.6	7.8	8.1	8.1	9.0	9.1	9.8	10.2	11.0	11.2	11.5	10.8	9.6	8.6	8.4	8.2	8.0	8.0	7.9	8.9
Montgomery, Ala	6.5	7.2	6.8	6.4	6.1	6.5	6.0	6.1	6.4	6.8	7.7	7.5	7.6	7.6	7.7	7.7	7.8	7.1	6.9	6.2	6.4	6.1	6.0	6.5	6.8
Moorhead, Minn	8.9	9.5	9.5	9.5	9.4	9.5	9.9	10.1	10.5	10.5	10.9	12.0	12.6	12.5	12.4	11.9	11.1	10.3	9.1	9.0	8.8	8.8	8.3	8.8	10.2
Nantucket, Mass	11.7	12.1	11.9	12.2	12.4	12.2	11.8	11.7	11.5	11.4	12.2	12.9	12.9	12.7	12.3	11.5	11.4	11.2	11.7	12.2	12.5	12.1	12.5	11.9	12.0
Nashville, Tenn	7.7	7.8	7.9	8.0	7.1	6.8	7.5	7.4	7.7	8.4	8.6	8.6	9.2	9.3	9.3	9.5	9.7	9.2	8.9	8.1	8.0	7.7	7.9	7.8	8.2
New Haven, Conn	7.8	7.4	8.3	8.7	8.8	8.4	8.1	8.2	9.0	9.5	10.1	10.8	11.6	11.9	12.0	11.2	10.2	8.9	9.4	8.8	8.2	7.9	8.3	8.3	9.2
New London, Conn	6.0	6.5	6.4	6.3	7.1	7.3	7.0	7.3	7.6	8.8	8.9	9.2	9.7	9.7	9.5	9.1	8.8	7.8	7.5	7.6	7.2	6.7	5.8	6.2	7.7
New Orleans, La	9.0	9.7	9.5	8.9	8.9	8.5	8.8	9.5	9.6	9.7	10.0	10.9	11.2	12.1	11.4	10.5	10.0	9.4	8.4	8.7	9.0	9.1	8.8	9.0	9.6
New York, N. Y	9.8	10.1	10.4	9.9	9.9	9.5	9.6	9.8	10.3	11.1	11.5	11.6	11.5	11.8	11.4	11.6	11.9	11.0	10.4	10.5	10.4	10.1	9.9	9.7	10.6
Norfolk, Va	9.3	9.0	9.1	8.9	8.4	8.8	8.9	9.1	9.3	10.6	11.6	12.4	13.0	13.1	12.4	12.3	12.2	10.3	9.6	8.9	8.7	8.5	8.7	8.9	10.1
Northfield, Vt	8.4	8.5	8.1	7.1	6.9	6.8	6.7	6.6	6.1	6.7	7.3	8.7	10.0	9.7	9.7	9.9	8.1	7.7	8.1	8.6	8.7	8.9	8.6	8.5	8.1
North Platte, Nebr	7.0	7.3	7.2	7.1	7.3	7.4	7.8	8.3	7.9	7.6	8.1	9.4	10.0	12.3	12.1	12.3	11.3	10.7	9.0	8.3	8.2	7.5	7.2	7.3	8.7
Oklahoma, Okla	9.0	8.5	8.5	8.6	8.7	8.7	8.4	8.4	7.9	8.2	8.5	9.1	10.1	10.6	10.7	10.6	10.9	10.3	8.7	8.3	8.8	8.9	9.0	9.0	9.1
Omaha, Nebr	7.1	6.6	6.9	6.5	6.7	7.1	6.7	6.8	7.4	7.5	8.7	9.6	10.3	10.4	10.5	10.7	10.4	9.0	7.7	7.8	7.8	7.5	7.7	7.1	8.1
Oswego, N. Y	15.2	15.0	14.2	14.0	14.4	13.3	12.7	13.0	13.4	14.0	14.4	14.1	14.7	14.8	14.7	14.7	14.6	14.7	14.0	14.2	14.7	15.4	15.5	15.5	14.4
Palestine, Tex	6.7	6.8	6.8	6.6	6.6	6.3	6.0	6.4	6.0	6.4	7.4	7.5	7.9	8.4	8.8	8.2	8.5	8.0	6.5	6.1	7.1	7.8	7.9	7.3	7.2

TABLE VI.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Parkersburg, W. Va..	7.3	7.0	6.6	6.4	5.8	6.5	6.6	6.6	7.2	7.4	8.1	8.0	8.8	8.8	8.2	8.1	6.8	6.4	6.3	6.1	6.4	5.9	6.3	6.9	7.0
Pensacola, Fla........	9.1	9.8	9.8	9.7	9.3	9.4	9.5	9.6	9.9	10.3	10.5	10.3	10.4	10.5	10.8	11.8	11.1	9.9	8.8	8.1	8.2	8.6	8.7	8.4	9.7
Philadelphia, Pa......	10.5	10.2	9.9	10.1	9.6	9.7	9.9	10.2	10.6	11.8	12.6	12.3	12.6	12.9	12.8	12.4	11.8	11.0	11.0	11.0	9.9	9.9	10.1	10.5	11.0
Pierre, S. Dak.........	6.7	8.0	8.6	8.2	8.2	7.8	7.8	7.8	7.3	7.6	8.1	8.9	9.6	10.0	10.2	10.0	9.7	9.8	9.4	8.0	6.8	6.6	7.2	7.0	8.3
Pittsburg, Pa.........	7.6	7.3	7.4	7.4	7.7	7.5	7.3	7.7	8.9	9.1	9.5	9.5	9.7	9.7	9.8	9.2	9.0	7.8	7.7	7.5	7.9	7.9	8.1	7.8	8.3
Port Angeles, Wash..	5.1	5.1	4.9	6.1	6.1	5.4	5.7	5.1	5.3	5.1	5.9	5.4	4.8	4.3	3.8	4.0	4.3	4.5	4.3	4.0	3.8	4.0	4.0	4.4	4.8
Port Huron, Mich	11.2	11.6	11.7	11.1	11.2	11.4	11.6	11.0	11.8	12.7	14.2	15.1	15.8	16.2	16.3	15.9	15.0	14.5	13.0	13.5	14.4	14.0	12.8	12.0	13.2
Portland, Me..........	7.8	7.1	6.5	6.6	6.2	6.5	6.4	6.4	6.6	6.9	7.3	6.7	7.1	7.0	7.0	7.1	6.3	6.6	6.3	6.3	6.3	7.2	7.2	7.1	6.7
Portland, Oreg	7.5	7.3	7.5	7.0	7.1	6.9	6.2	6.4	6.7	7.1	6.6	7.6	7.3	7.1	6.6	7.0	7.4	7.2	7.6	7.4	6.5	6.6	6.5	6.3	7.0
Pueblo, Colo...........	4.4	5.9	5.5	6.2	7.0	7.5	7.4	6.5	6.1	6.5	6.8	7.2	9.0	10.2	11.3	11.9	11.3	10.9	9.1	8.1	7.3	6.5	6.0	4.6	7.6
Raleigh, N. C	6.1	5.8	5.8	6.0	6.0	5.9	6.0	5.9	6.2	7.2	7.7	8.4	8.7	8.6	9.0	8.9	7.9	6.7	6.3	6.8	6.6	7.0	6.7	5.8	6.9
Rapid City, S. Dak ...	7.0	7.3	7.2	7.0	6.9	7.2	7.9	7.9	7.5	6.7	6.3	6.8	7.4	8.9	9.6	9.9	10.4	9.0	7.1	6.9	6.6	6.6	6.0	6.7	7.5
Red Bluff, Cal	8.4	8.6	8.3	8.2	8.4	8.1	8.0	8.3	8.0	8.2	8.4	8.3	9.5	10.5	10.8	11.3	11.5	11.2	10.6	10.1	9.5	9.2	8.5	8.5	9.2
Rochester, N. Y......	10.3	10.3	10.5	10.1	9.7	9.1	9.1	9.7	10.2	10.8	10.7	12.2	12.9	12.3	11.5	11.1	10.9	10.1	10.5	10.3	10.4	10.4	10.0	10.2	10.5
Roseburg, Oreg.......	3.1	3.2	3.7	3.6	3.7	3.4	3.0	3.7	3.1	3.0	3.2	2.9	3.1	3.5	4.2	4.3	4.7	5.3	4.9	3.8	3.2	3.0	3.3	3.2	3.6
Sacramento, Cal......	11.4	11.6	10.6	10.4	10.1	9.7	9.6	10.3	10.4	11.0	10.9	11.2	11.1	12.1	13.4	13.6	13.3	12.4	11.8	10.9	10.4	11.0	11.6	11.8	11.3
St. Louis, Mo.........	12.8	12.9	12.0	12.3	11.9	11.8	11.8	12.1	12.9	13.3	13.3	12.4	13.0	13.5	14.1	13.6	13.5	12.7	12.4	12.9	13.0	13.5	13.0	12.8	12.8
St. Paul, Minn........	6.9	6.7	6.9	7.0	7.3	7.5	7.3	7.0	7.1	7.7	8.2	9.0	9.1	10.0	10.4	11.0	10.3	9.7	8.6	8.8	7.7	7.6	7.2	7.4	8.2
St. Vincent, Minn	8.5	8.5	8.7	8.8	9.1	9.2	9.0	9.5	9.1	9.5	9.9	11.2	11.3	11.6	11.3	10.8	10.0	8.6	7.9	7.8	7.9	8.5	8.7	8.8	9.3
Salt Lake City, Utah.	5.3	5.2	5.3	5.7	6.2	5.8	5.5	5.5	5.3	5.7	5.5	5.9	6.9	7.0	7.5	7.8	8.3	7.1	6.9	5.8	5.7	5.7	6.2	5.5	6.1
San Antonio, Tex.....	6.0	5.5	4.7	4.8	5.5	5.8	5.3	5.5	5.8	6.1	7.5	7.6	8.1	8.3	8.5	8.2	8.4	8.2	7.2	6.5	6.1	7.0	6.5	6.4	6.6
San Diego, Cal.........	5.3	4.6	4.2	4.6	4.8	5.0	5.2	5.5	5.8	5.6	5.3	4.5	4.3	5.2	6.3	6.7	7.3	7.4	7.5	6.6	4.9	4.6	4.6	4.6	5.4
Sandusky, Ohio	9.9	9.5	9.8	10.7	10.2	9.8	10.0	10.0	10.4	10.6	10.7	11.3	12.0	12.1	11.6	11.4	10.5	10.1	9.9	9.5	9.1	8.9	8.7	9.6	10.3
San Francisco, Cal...	8.2	7.5	7.6	7.4	7.9	7.4	7.8	8.1	8.4	8.6	8.5	10.3	10.5	11.7	12.0	12.1	12.2	11.7	10.5	9.9	10.4	10.1	10.0	9.2	9.5
San Luis Obispo, Cal.	5.1	5.3	5.9	4.9	4.7	4.4	4.1	4.3	3.6	3.6	3.3	3.6	3.8	4.0	5.5	6.0	6.9	7.0	7.1	7.1	6.1	5.6	4.8	5.4	5.1
Santa Fe, N. Mex.....	5.3	5.5	5.6	5.2	5.3	5.9	6.3	6.3	5.8	6.4	6.4	7.9	9.4	11.1	10.9	10.7	9.5	9.2	8.6	6.8	5.5	5.7	5.4	5.3	7.1
Sault Ste Marie, Mich.	8.5	8.0	8.3	8.7	9.0	7.9	7.6	7.1	6.8	6.4	6.6	6.8	7.3	8.1	8.1	8.7	8.6	8.5	9.4	9.4	9.0	8.5	9.1	8.6	8.1
Savannah, Ga..........	6.5	6.5	7.0	7.2	7.7	7.7	7.9	7.5	7.5	8.3	9.3	10.0	10.3	9.9	10.1	10.1	9.1	8.7	7.9	7.4	7.2	7.2	6.8	7.0	8.1
Seattle, Wash	5.2	6.6	6.5	5.4	5.2	5.2	4.7	4.5	4.9	5.3	4.6	4.1	4.7	4.3	4.8	5.1	5.7	6.0	6.0	5.4	5.3	5.4	5.1	5.4	5.2
Shreveport, La	8.1	7.7	7.2	7.3	7.3	7.2	7.2	7.7	7.4	8.0	7.7	8.5	8.4	8.8	8.5	8.6	9.2	9.4	8.0	7.6	8.0	8.0	8.7	8.7	8.0
Sioux City, Iowa	9.1	9.5	9.7	10.0	10.7	10.8	10.6	11.0	11.0	12.1	13.1	13.3	13.8	15.1	15.7	15.7	15.5	14.1	11.7	11.2	10.7	10.9	10.8	9.5	12.0
Spokane, Wash.......	4.6	4.5	5.0	4.8	4.7	4.6	4.7	4.8	5.0	5.7	5.5	5.8	6.6	6.5	6.1	6.0	5.9	6.2	6.3	5.5	5.7	5.7	5.5	4.6	5.4
Springfield, Ill........	10.5	10.8	10.4	10.6	10.5	10.5	10.4	10.5	10.3	11.1	11.0	11.6	12.2	12.8	12.5	12.3	11.5	10.6	10.1	10.1	10.4	10.4	11.0	10.0	10.9
Springfield, Mo.......	9.5	10.1	10.3	10.5	10.4	10.5	9.5	9.8	9.3	9.9	10.4	10.9	11.3	11.5	11.0	11.6	11.4	10.9	9.6	9.8	9.8	9.6	10.0	10.1	10.3
Tampa, Fla...........	5.3	5.5	4.8	4.7	5.2	5.2	5.8	5.9	5.9	6.8	7.2	7.8	9.0	9.4	9.9	9.3	8.3	7.4	6.7	5.6	5.2	5.5	5.4	5.1	6.5
Tatoosh Island, Wash.	16.8	18.3	18.1	17.9	18.6	19.0	18.5	19.6	19.3	19.0	19.1	18.1	18.3	18.9	18.7	17.2	17.2	17.2	15.8	16.6	16.7	17.2	16.8	16.7	17.9
Titusville, Fla........	9.0	9.1	9.0	9.3	9.6	9.4	9.7	10.1	10.1	10.8	11.8	12.4	14.5	15.1	15.0	14.8	14.0	11.2	10.5	10.7	9.3	9.5	9.0	8.7	10.9
Toledo, Ohio..........	10.7	10.7	10.6	11.0	11.3	11.4	11.3	10.8	11.7	11.8	12.4	13.3	14.3	13.8	13.9	13.5	12.8	12.6	12.3	11.7	11.7	11.1	10.8	10.8	11.9
Tucson, Ariz..........	3.3	3.1	3.8	4.3	4.1	3.9	3.9	3.7	3.4	3.9	4.5	4.1	4.8	5.1	5.2	5.4	5.8	6.9	6.8	5.4	4.4	3.9	3.4	3.7	4.5
Vicksburg, Miss......	8.5	8.5	8.3	8.4	8.8	8.8	9.0	8.7	8.9	9.4	9.0	8.6	9.0	8.6	8.3	8.2	8.0	7.7	6.9	7.3	8.4	8.6	8.8	8.0	8.4
Vineyard Haven, Mass	9.3	9.6	9.7	9.8	9.6	10.3	9.8	9.4	9.8	10.1	10.4	11.0	10.5	10.7	10.3	10.0	9.6	9.4	9.6	9.5	9.5	9.7	9.7	9.1	9.8
Walla Walla, Wash...	5.2	5.0	5.1	5.1	5.3	5.3	5.4	6.3	6.5	6.0	5.9	6.0	6.1	6.9	6.9	6.7	6.8	6.5	5.6	5.5	5.5	5.4	4.9	5.3	5.8
Washington, D. C.....	5.7	6.0	5.5	5.1	5.1	5.0	5.3	5.7	6.4	7.0	7.7	7.8	8.7	8.9	9.3	9.6	8.7	6.6	6.9	6.4	6.3	6.5	6.0	5.7	6.7
Wichita, Kans.........	7.7	8.4	8.0	7.7	8.0	7.8	8.0	8.3	8.5	8.8	10.0	10.4	11.3	11.0	10.8	10.5	10.1	9.3	8.4	7.5	7.9	7.7	8.4	8.6	8.9
Williston, N. Dak.....	7.6	7.2	7.7	7.4	7.6	8.7	9.0	8.9	9.4	8.5	8.2	9.1	10.9	12.4	12.7	12.4	12.4	11.5	9.6	8.8	8.9	8.3	8.6	8.2	9.3
Wilmington, N. C.....	8.3	8.5	8.4	8.5	8.8	8.7	8.6	8.4	9.3	10.0	10.5	10.8	11.5	11.2	11.0	10.2	9.3	8.0	8.2	7.8	7.5	7.9	8.7	7.9	9.1
Winnemucca, Nev....	9.2	10.0	9.8	10.4	10.6	10.1	9.9	10.3	10.7	10.3	10.2	10.1	11.3	11.6	12.3	12.4	12.9	12.4	11.6	11.3	10.4	10.0	9.6	8.6	10.7
Woods Holl, Mass....	16.2	15.6	14.7	15.3	15.0	14.6	14.6	15.2	15.0	16.3	16.4	15.7	15.9	15.9	16.6	16.3	16.6	16.2	16.8	17.6	17.8	18.4	17.8	16.8	16.1
Yuma, Ariz............	4.7	5.0	5.1	4.9	5.4	5.8	5.7	6.5	6.5	6.3	7.4	8.8	11.3	12.0	11.6	10.7	10.7	10.6	9.5	7.4	6.5	5.8	5.1	4.8	7.4

TABLE VII.—*Heights of rivers above low-water mark, January, 1895.*

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water. Height.	Highest water. Date.	Lowest water. Height.	Lowest water. Date.	Me'n stage.	Monthly range.
	Miles.	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet*
Mississippi River.								
St. Paul, Minn.‡	2,067	14.0	....	....	....	....	.....	....
La Crosse, Wis.‡......	1,867	10.0	....	....	....	....	.....	....
Dubuque, Iowa‡	1,759	15.0	....	....	....	....	.....	....
Davenport, Iowa‡....	1,653	15.0	....	....	....	....	.....	....
Keokuk, Iowa‡.......	1,523	14.0	....	....	....	....	.....	....
Hannibal, Mo.‡.......	1,462	17.0	....	....	....	....	.....	....
St. Louis, Mo.§	1,321	30.0	3.0	18,29	— 0.7	27	0.6	3.7
Memphis, Tenn	910	33.0	24.0	24,25	1.9	10	12.6	22.1
Helena, Ark	834	37.0	30.9	26	3.0	12	16.2	27.9
Arkansas City, Ark...	702	42.0	30.9	27,28	3.4	13	15.6	27.5
Greenville, Miss	662	40.0	26.3	27	3.0	14	12.9	23.3
Vicksburg, Miss	541	41.0	29.1	29-31	1.0	14,15	11.5	28.1
New Orleans, La	108	13.0	8.7	31	2.3	17	4.4	6.4
Illinois River.								
Beardstown, Ill.‡	76	12.0	....	....	....	....	.....	....
Missouri River.								
Pierre, S. Dak.‡	1,132	13.0	....	....	....	....	.....	....
Sioux City, Iowa‡ ...	802	18.7	....	....	....	....	.....	....
Omaha, Nebr.‡	667	18.0	....	....	....	....	.....	....
Kansas City, Mo.‡....	386	21.0	....	....	....	....	.....	....
Ohio River.								
Parkersburg, W. Va..	786	38.0	37.0	11	4.4	5	15.5	32.6
Catlettsburg, Ky......	652	50.0	48.6	12	6.0	5	24.5	42.6
Cincinnati, Ohio......	500	45.0	48.4	14	8.2	6	28.3	40.2
Louisville, Ky.‖	368	24.0	21.3	15	4.9	6	11.6	16.4
Evansville, Ind.......	184	30.0	35.5	17,18	5.8	4	22.9	29.7
Paducah, Ky..........	47	40.0	32.8	20,21	5.7	1,6,7	20.5	27.1
Cairo, Ill.............	1,140*	40.0	33.1	22	6.6	7	20.8	26.5
Monongahela River.								
Pittsburg, Pa	966†	22.0	25.7	8	2.6	1,2	8.3	23.1
Great Kanawha River.								
Charleston, W. Va....	61	30.0	18.3	12	2.6	3,4	8.1	15.7
Scioto River.								
Circleville, Ohio‡.....	65	13.0	....	....	....	....	.....	....
Big Sandy River.								
Louisa, Ky	26	....	27.0	11	5.8	5	11.9	21.2
Wabash River.								
Mount Carmel, Ill.¶..	50	15.0	7.5	25	1.8	7	5.0	5.7
Cumberland River.								
Burnside, Ky.........	404	50.0	33.0	12	2.8	6	13.3	30.2
Nashville, Tenn	145	40.0	30.3	17	5.4	6	19.1	24.9
Tennessee River.								
Knoxville, Tenn......	640	29.0	18.5	11	2.0	2	16.8	16.5
Chattanooga, Tenn...	455	33.0	32.1	12	3.1	5,6	11.5	29.0
Johnsonville, Tenn...	94	21.0	25.5	19	3.9	7	14.6	21.6
Arkansas River.								
Fort Smith, Ark	351	22.0	1.6	6-8	0.6	1	1.1	1.0
Litttle Rock, Ark.....	176	23.0	5.6	28,29	2.5	3-6	3.3	3.1
Red River.								
Shreveport, La........	449	29.2	4.9	6,7	0.1	30	3.8	4.8
James River.								
Lynchburg, Va........	251	18.0	10.0	11	0.3	5-7	3.2	9.7
Congaree River.								
Columbia, S. C...	....	15.0	17.4	11,12	0.9	8	5.3	16.5
Savannah River.								
Augusta, Ga	140	32.6	30.2	11	7.7	8	13.4	22.5
Alabama River.								
Montgomery, Ala.....	215	48.0	31.0	12	4.4	8	17.1	26.6
Willamette River.								
Portland, Oreg........	....	15.0	15.9	14	3.0	1,2	7.8	12.9
Sacramento River.								
Red Bluff, Cal........	....	22.0	22.4	22	4.8	31	10.6	17.6
Sacramento, Cal......	....	25.0	26.6	27	19.8	3	23.7	6.8

* To mouth of Mississippi River. † To mouth of Ohio River. ‡ River frozen. § Record for 28 days. ‖ Record for 29 days. ¶ Record for 24 days.

TABLE VIII.—*Temperature of the wet-bulb thermometer, January*, 1895.

Stations.	Local time faster or slower than 75th meridian time.	8 A. M.			8 P. M.		
		Max.	Min.	Mean.	Max.	Min.	Mean.
New England.	h. m.	°	°	°	°	°	°
Eastport, Me	32 F.	38	-5	20	44	2	24
Portland, Me	19 F.	35	-3	18	41	11	22
Northfield, Vt	9 F.	34	-15	11	36	-2	16
Boston, Mass	16 F.	45	2	24	48	13	27
Nantucket, Mass	20 F.	47	9	30	46	15	30
Woods Holl, Mass	17 F.	......	......	......	48	14	29
Block Island, R. I	14 F.	47	9	29	47	17	29
New Haven, Conn	8 F.	42	5	23	42	14	25
New London, Conn	12 F	46	6	26	44	16	27
Middle Atlantic States.							
Albany, N. Y	5 F.	42	-2	19	41	6	22
New York, N. Y	4 F.	48	11	27	48	10	27
Harrisburg, Pa	7 S.	42	6	23	42	1	26
Philadelphia, Pa	0	51	12	27	40	10	28
Baltimore, Md	6 S.	47	8	26	48	10	29
Washington, D. C	8 S.	47	5	27	50	12	30
Lynchburg, Va	16 S.	46	-2	28	53	16	32
Norfolk, Va	5 S.	58	16	35	55	16	37
South Atlantic States.							
Charlotte, N. C	23 S.	56	4	33	55	20	38
Hatteras, N. C	2 S.	63	25	43	59	24	44
Kittyhawk, N. C	3 S.	60	20	39	54	19	40
Raleigh, N. C	14 S.	55	6	33	56	17	37
Wilmington, N. C	12 S.	60	19	39	59	20	42
Charleston, S. C	20 S.	58	19	42	60	25	46
Augusta, Ga	27 S.	56	10	38	61	26	43
Savannah, Ga	24 S.	59	20	43	62	27	47
Jacksonville, Fla	26 S.	64	26	48	64	31	51
Florida Peninsula.							
Jupiter, Fla	20 S.	70	40	59	70	49	62
Key West, Fla	27 S.	72	51	64	72	54	65
Tampa, Fla	30 S.	68	32	54	69	39	58
Titusville, Fla	23 S.	69	33	54	68	40	58
Eastern Gulf States.							
Atlanta, Ga	37 S.	55	6	35	57	16	39
Pensacola, Fla	49 S.	62	21	44	64	29	49
Mobile, Ala	52 S.	64	18	42	62	31	47
Montgomery, Ala	45 S.	60	15	39	63	24	45
Meridian, Miss	55 S.	62	14	38	64	24	43
Vicksburg, Miss	1 03 S.	64	20	40	64	27	45
New Orleans, La	1 00 S.	66	27	47	68	29	49
Western Gulf States.							
Shreveport, La	1 14 S.	63	21	38	66	25	42
Fort Smith, Ark	1 17 S.	51	7	28	62	17	35
Little Rock, Ark	1 08 S.	61	11	30	62	18	36
Corpus Christi, Tex	1 30 S.	66	29	50	69	41	57
Galveston, Tex	1 19 S.	63	28	49	65	32	51
Palestine, Tex	1 22 S.	65	17	39	65	27	44
San Antonio, Tex	1 34 S.	69	21	42	65	30	48
Ohio Valley and Tenn.							
Chattanooga, Tenn	41 S.	52	10	32	54	11	36
Knoxville, Tenn	36 S.	51	4	30	52	1	34
Memphis, Tenn	1 00 S.	62	8	32	62	12	36
Nashville, Tenn	47 S.	58	-2	30	59	4	34
Lexington, Ky	38 S.	54	-10	24	52	8	28
Louisville, Ky	43 S.	56	-10	24	57	-1	29
Indianapolis, Ind	44 S.	52	-13	19	42	-1	20
Cincinnati, Ohio	38 S.	54	-9	22	51	-7	27
Columbus, Ohio	32 S.	48	-5	20	47	-4	25
Pittsburg, Pa	20 S.	50	-4	25	50	0	28
Parkersburg, W. Va	26 S.	51	-4	25	51	-4	29
Lower Lake Region.							
Buffalo, N. Y	15 S.	43	4	21	42	7	22
Oswego, N. Y	6 S.	39	-4	19	40	4	22
Rochester, N. Y	11 S.	40	5	21	42	5	22
Erie, Pa	20 S.	41	-3	20	45	9	22
Cleveland, Ohio	27 S.	42	-6	19	45	-5	23
Sandusky, Ohio	30 S.	45	-1	19	41	-2	22
Toledo, Ohio	34 S.	43	-3	17	39	-4	21
Detroit, Mich	32 S.	42	-4	16	37	-2	20
Upper Lake Region.							
Alpena, Mich	34 S.	32	-2	14	30	5	18
Grand Haven, Mich	45 S.	45	-2	17	38	8	20
Marquette, Mich	49 S.	33	-10	12	32	-2	14
Port Huron, Mich	30 S.	38	-7	16	36	4	20
Sault Ste. Marie, Mich	37 S.	34	-8	8	30	2	15
Chicago, Ill	50 S.	51	-8	14	41	-3	19
Up. Lake Region—Con.	h. m.	°	°	°	°	°	°
Milwaukee, Wis	51 S.	37	-11	11	34	-5	16
Green Bay, Wis	52 S.	36	-15	8	33	-8	14
Duluth, Minn	1 08 S.	26	-19	4	30	-15	9
North Dakota.							
Moorhead, Minn	1 27 S.	23	-27	-6	24	-21	0
St. Vincent, Minn	1 29 S.	22	-30	-11	24	-24	-4
Bismarck, N. Dak	1 42 S.	26	-28	-7	26	-22	1
Williston, N. Dak	1 54 S.	26	-34	-5	28	-20	-1
Upper Mississippi Valley.							
St. Paul, Minn	1 12 S.	22	-20	2	32	-10	8
La Crosse, Wis	1 05 S.	34	-17	6	38	-7	12
Davenport, Iowa	1 02 S.	37	-12	10	48	-10	17
Des Moines, Iowa	1 14 S.	48	-12	11	51	-8	18
Keokuk, Iowa	1 06 S.	41	-10	13	47	-8	20
Cairo, Ill	56 S.	59	-1	26	61	10	32
Springfield, Ill	58 S.	37	-6	15	46	-5	21
Hannibal, Mo	1 05 S.	44	-8	15	56	-5	22
St. Louis, Mo	1 01 S.	40	-6	21	53	4	25
Missouri Valley.							
Columbia, Mo	1 09 S.	......	......	......	56	0	22
Kansas City, Mo	1 18 S.	54	-8	18	56	-2	25
Springfield, Mo	1 13 S.	50	-13	21	57	9	27
Omaha, Nebr	1 24 S.	47	-12	11	44	-10	19
Sioux City, Iowa	1 26 S.	37	-15	8	39	-10	14
Pierre, S. Dak	1 41 S.	27	-14	3	29	-11	11
Huron, S. Dak	1 32 S.	28	-23	0	30	-16	6
Northern Slope.							
Havre, Mont	2 19 S.	35	-24	-2	35	-14	3
Miles City, Mont	2 03 S.	28	-19	3	36	-9	10
Helena, Mont	2 28 S.	40	-14	13	38	-10	17
Rapid City, S. Dak	1 53 S.	37	-4	10	40	-5	16
Cheyenne, Wyo	1 59 S.	37	-11	19	36	-3	21
Lander, Wyo	2 15 S.	30	-27	6	40	-11	17
North Platte, Nebr	1 43 S.	31	-9	12	36	0	20
Middle Slope.							
Denver, Colo	2 00 S.	37	-6	20	43	0	26
Pueblo, Colo	1 58 S.	38	-4	18	40	4	27
Concordia, Kans	1 31 S.	41	7	15	49	2	22
Dodge City, Kans	1 40 S.	36	2	18	44	7	26
Wichita, Kans	1 29 S.	52	-1	20	53	8	27
Oklahoma, Okla	1 30 S.	50	5	24	60	9	32
Southern Slope.							
Abilene, Tex	1 39 S.	55	5	30	58	14	37
Amarillo, Tex	1 47 S.	37	0	22	44	6	29
Southern Plateau.							
El Paso, Tex	2 06 S.	44	20	32	49	26	40
Santa Fe, N. Mex	2 04 S.	32	0	20	39	11	24
Tucson, Ariz	2 24 S.	52	28	38	52	37	46
Yuma, Ariz	2 38 S.	57	33	42	57	40	48
Independence, Cal	2 53 S.	52	17	30	43	25	34
Middle Plateau.							
Carson City, Nev	2 59 S.	40	-1	22	41	19	30
Winnemucca, Nev	2 51 S.	38	-9	18	36	10	26
Salt Lake City, Utah	2 27 S.	37	0	4	42	14	28
Northern Plateau.							
Baker City, Oreg	2 51 S.	42	-1	20	37	8	25
Idaho Falls, Idaho	2 28 S.	37	-20	13	35	-10	18
Spokane, Wash	2 49 S.	42	12	24	43	17	28
Walla Walla, Wash	2 53 S.	56	12	30	55	18	31
N. Pac. Coast Region.							
Fort Canby, Wash	3 16 S.	52	31	38	51	34	40
Port Angeles, Wash	3 14 S.	46	28	34	44	29	36
Seattle, Wash	3 09 S.	56	29	36	53	31	38
Tatoosh Island, Wash	3 19 S.	50	31	39	52	34	40
Portland, Oreg	3 11 S.	53	26	34	52	28	36
Roseburg, Oreg	3 13 S.	53	22	35	53	35	41
Mid. Pac. Coast Region.							
Eureka, Cal	3 17 S.	58	32	41	57	39	46
Red Bluff, Cal	3 09 S.	51	29	39	51	37	44
Sacramento, Cal	3 06 S.	52	32	42	52	39	45
San Francisco, Cal	3 10 S.	55	36	44	55	39	46
S. Pac. Coast Region.							
Fresno, Cal	2 59 S.	51	31	41	55	38	46
Los Angeles, Cal	2 53 S.	54	35	44	59	43	50
San Diego, Cal	2 49 S.	58	35	46	58	46	52
San Luis Obispo, Cal	3 03 S.	52	33	42	56	40	48

TABLE IX.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during January, 1895.*

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
	Hours.	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
New England.						
Eastport, Me	22	11	13	33	n. 61 w.	23
Portland, Me	19	10	5	40	n. 76 w.	36
Northfield, Vt	12	39	6	19	s. 26 w.	30
Boston, Mass	13	11	5	41	n. 87 w.	36
Nantucket, Mass	36	5	16	17	n. 2 w.	31
Woods Holl, Mass	8	6	5	18	n. 81 w.	13
Block Island, R. I	24	6	12	35	n. 52 w.	29
New Haven, Conn	23	15	2	30	n. 74 w.	29
New London, Conn	26	10	9	33	n. 56 w.	29
Middle Atlantic States.						
Albany, N. Y	14	36	4	17	s. 30 w.	26
New York, N. Y	23	12	10	33	n. 64 w.	26
Harrisburg, Pa	11	9	21	26	n. 68 w.	5
Philadelphia, Pa	25	15	11	28	n. 60 w.	20
Baltimore, Md	18	13	14	29	n. 72 w.	16
Washington, D. C	24	19	8	22	n. 70 w.	15
Lynchburg, Va	15	20	14	30	s. 73 w.	17
Norfolk, Va	18	15	13	25	n. 76 w.	12
South Atlantic States.						
Charlotte, N. C	10	28	21	25	s. 13 w.	18
Hatteras, N. C	25	16	7	24	n. 62 w.	19
Kittyhawk, N. C	25	13	14	25	n. 43 w.	16
Raleigh, N. C	20	25	11	18	s. 54 w.	9
Wilmington, N. C	23	15	14	26	n. 56 w.	14
Charleston, S. C	25	14	13	22	n. 39 w.	14
Augusta, Ga	16	16	18	24	w.... ..	6
Savannah, Ga	22	16	12	25	n. 65 w.	14
Jacksonville, Fla	20	19	16	21	n. 79 w.	5
Florida Peninsula.						
Jupiter, Fla	18	25	11	21	s. 55 w.	12
Key West, Fla	23	14	35	2	n. 75 e.	34
Tampa, Fla	25	19	16	16	n.	6
Titusville, Fla	17	19	10	26	s. 83 w.	16
Eastern Gulf States.						
Atlanta, Ga	15	12	19	28	n. 72 w.	10
Pensacola, Fla	26	15	19	16	n. 15 e.	11
Mobile, Ala	29	18	9	16	n. 32 w.	13
Montgomery, Ala	14	14	18	22	w.... ..	4
Meridian, Miss	29	20	15	17	n. 13 w.	9
Vicksburg, Miss	23	19	23	12	n. 70 e.	12
New Orleans, La	26	18	22	10	n. 56 e.	14
Western Gulf States.						
Shreveport, La	18	20	22	15	s. 74 e.	7
Fort Smith, Ark	17	9	31	16	n. 62 e.	17
Little Rock, Ark	23	13	16	20	n. 22 w.	11
Corpus Christi, Tex	27	13	25	9	n. 49 e.	21
Galveston, Tex	23	23	22	7	e.	15
Palestine, Tex	18	26	11	22	s. 54 w.	14
San Antonio, Tex	27	15	22	7	n. 51 e.	19
Ohio Valley and Tennessee.						
Chattanooga, Tenn	20	13	13	24	n. 58 w.	13
Knoxville, Tenn	24	6	19	24	n. 16 w.	19
Memphis, Tenn	20	18	18	19	n. 27 w.	2
Nashville, Tenn	22	18	12	22	n. 68 w.	11
Lexington, Ky	12	25	13	23	s. 38 w.	16
Louisville, Ky	18	26	8	21	s. 58 w.	15
Indianapolis, Ind	15	22	12	28	s. 66 w.	18
Cincinnati, Ohio	13	27	18	24	s. 23 w.	15
Columbus, Ohio	10	27	16	22	s. 19 w.	18
Pittsburg, Pa	9	22	12	30	s. 54 w.	22
Parkersburg, W. Va	9	23	14	24	s. 36 w.	17
Lower Lake Region.						
Buffalo, N. Y	11	18	10	37	s. 75 w.	28
Oswego, N. Y	7	37	13	21	s. 15 w.	31
Rochester, N. Y	5	34	8	34	s. 42 w.	39
Erie, Pa	6	30	6	34	s. 49 w.	37
Cleveland, Ohio	6	36	15	22	s. 13 w.	31
Sandusky, Ohio	7	22	9	38	s. 62 w.	33
Toledo, Ohio	8	20	7	38	s. 69 w.	33
Detroit, Mich	11	21	10	37	s. 70 w.	29
Upper Lake Region.						
Alpena, Mich	14	14	10	36	w.... ..	26
Grand Haven, Mich	22	15	21	23	n. 16 w.	7
Marquette, Mich	20	16	3	35	n. 83 w.	32
Port Huron, Mich	5	37	10	22	s. 21 w.	34
Sault Ste. Marie, Mich	13	24	25	18	s. 32 e.	13
Chicago, Ill	19	18	8	33	n. 88 w.	25
Upper Lake Region—Cont'd.						
Milwaukee, Wis	10	15	6	41	s. 82 w.	35
Green Bay, Wis	17	25	5	24	s. 67 w.	21
Duluth, Minn	19	15	7	36	n. 82 w.	29
North Dakota.						
Moorhead, Minn	28	17	6	25	n. 60 w.	22
St. Vincent, Minn	27	16	7	23	n. 56 w.	19
Bismarck, N. Dak	32	9	14	21	n. 17 w.	24
Williston, N. Dak	17	13	9	37	n. 82 w.	28
Upper Mississippi Valley.						
St. Paul, Minn	12	20	16	32	s. 63 w.	18
La Crosse, Wis	17	23	5	25	s. 73 w.	21
Davenport, Iowa	10	19	12	33	s. 67 w.	23
Des Moines, Iowa	26	15	10	24	n. 52 w.	18
Keokuk, Iowa	22	17	12	28	n. 73 w.	17
Cairo, Ill	23	20	10	19	n. 72 w.	10
Springfield, Ill	23	16	9	25	n. 66 w.	18
Hannibal, Mo	17	17	11	28	w....	17
St. Louis, Mo	21	17	13	22	n. 66 w.	10
Missouri Valley.						
Columbia, Mo	8	9	9	10	s. 45 w.	1
Kansas City, Mo	23	23	19	17	e.	2
Springfield, Mo	19	19	22	16	e.	6
Omaha, Nebr	30	17	10	20	n. 38 w.	16
Sioux City, Iowa	32	15	9	19	n. 30 w.	20
Pierre, S. Dak	22	14	20	23	n. 21 w.	8
Huron, S. Dak	20	16	16	28	n. 72 w.	13
Northern Slope.						
Havre, Mont	26	5	16	30	n. 34 w.	25
Miles City, Mont	21	18	14	20	n. 63 w.	7
Helena, Mont	12	18	2	44	s. 82 w.	42
Rapid City, S. Dak	26	14	13	20	n. 30 w.	14
Cheyenne, Wyo	21	17	0	39	n. 84 w.	39
Lander, Wyo	17	25	10	26	s. 63 w.	18
North Platte, Nebr	18	19	9	30	s. 87 w.	21
Middle Slope.						
Denver, Colo	18	29	12	19	s. 32 w.	13
Pueblo, Colo	25	12	16	24	n. 32 w.	15
Concordia, Kans	24	24	11	13	w.... ..	2
Dodge City, Kans	25	17	18	15	n. 21 e.	8
Wichita, Kans	26	23	13	13	n.	3
Oklahoma, Okla	27	24	13	12	n. 18 e.	3
Southern Slope.						
Abilene, Tex	22	25	14	16	s. 34 w.	4
Amarillo, Tex	19	29	5	16	s. 48 w.	15
Southern Plateau.						
El Paso, Tex	26	3	12	38	n. 48 w.	35
Santa Fe, N. Mex	26	19	17	15	n. 16 e.	7
Tucson, Ariz	14	23	17	21	s. 24 w.	10
Yuma, Ariz	40	9	9	10	n. 2 w.	31
Independence, Cal	27	14	5	29	n. 62 w.	27
Middle Plateau.						
Carson City, Nev	13	27	16	18	s. 8 w.	14
Winnemucca, Nev	15	19	23	20	s. 37 e.	5
Salt Lake City, Utah	8	30	17	21	s. 10 w.	22
Northern Plateau.						
Baker City, Oreg	10	34	25	10	s. 32 e.	28
Idaho Falls, Idaho	22	25	2	22	s. 81 w.	20
Spokane, Wash	11	24	27	15	s. 43 e.	18
Walla Walla, Wash	5	40	15	10	s. 8 e.	35
North Pacific Coast Region.						
Fort Canby, Wash	9	11	35	15	s. 84 e.	20
Port Angeles, Wash	2	43	15	10	s. 7 e.	41
Seattle, Wash	17	27	17	7	s. 45 e.	14
Tatoosh Island, Wash	0	19	40	8	s. 59 e.	37
Portland, Oreg	16	31	19	13	s. 22 e.	16
Roseburg, Oreg	16	27	17	19	s. 10 w.	11
Middle Pacific Coast Region.						
Eureka, Cal	13	20	31	12	s. 70 e.	20
Red Bluff, Cal	22	24	17	17	s.	2
Sacramento, Cal	20	33	15	5	s. 38 e.	16
San Francisco, Cal	16	25	21	20	s. 6 e.	9
South Pacific Coast Region.						
Fresno, Cal	15	19	27	19	s. 68 e.	9
Los Angeles, Cal	26	7	23	17	n. 18 e.	20
San Diego, Cal	29	10	16	22	n. 18 w.	20
San Luis Obispo, Cal	29	17	14	18	n. 18 w.	13

TABLE X.—*Thunderstorms and auroras, January, 1895.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	51	T.							1	2								3					2											8	4	T.
		A.																																0	0	A.
Arizona	46	T.																												1				1	1	T.
		A.																																0	0	A.
Arkansas	44	T.						5	1								1					3	5			3	1							19	7	T.
		A.																																0	0	A.
Colorado	71	T.																																0	0	T.
		A.													1			1	1								1		1	1	1		1	8	8	A.
California	208	T.															4	6	4															14	3	T.
		A.																																0	0	A.
Connecticut	25	T.																																0	0	T.
		A.														1																		1	1	A.
Delaware	7	T.																1																1	1	T.
		A.																			1			1		1								3	3	A.
Dist. of Columbia	4	T.																																0	0	T.
		A.																																0	0	A.
Florida	36	T.			1					2	3	1			1	1	1	7	1						1	1	1	3					1	25	14	T.
		A.																																0	0	A.
Georgia	48	T.									3							3					2				2	1						11	5	T.
		A.																																0	0	A.
Idaho	27	T.																																0	0	T.
		A.																																0	0	A.
Illinois	64	T.						4														4	21											29	3	T.
		A.													1																			1	1	A.
Indiana	47	T.					1	3	1														5				2							12	5	T.
		A.												1													2		1					4	3	A.
Indian Territory	6	T.																			1													1	1	T.
		A.																																0	0	A.
Iowa	83	T.																				13	9											22	2	T.
		A.																										1						1	1	A.
Kansas	77	T.																				2												2	1	T.
		A.																																0	0	A.
Kentucky	41	T.						3	2														1				1							7	4	T.
		A.																																0	0	A.
Louisiana	48	T.			1		1	1	12	7						2	3	4			1	1	6	1	1	3	8							52	15	T.
		A.																																0	0	A.
Maine	17	T.																																0	0	T.
		A.	2																	1	1	1												5	4	A.
Maryland	40	T.																5		1														6	2	T.
		A.																																0	0	A.
Massachusetts	84	T.																																0	0	T.
		A.	6																		3													9	2	A.
Michigan	74	T.	1																			1	5											7	3	T.
		A.	1																														1	2	2	A.
Minnesota	65	T.																					1											1	1	T.
		A.	3			1		1			2				1		1	3							1			1			1			15	10	A.
Mississippi	48	T.							7			1					7	1			2		4			1	4							27	8	T.
		A.																																0	0	A.
Missouri	102	T.						1									1					11	17			1	1							32	6	T.
		A.																													1			1	1	A.
Montana	33	T.																																0	0	T.
		A.												1							1													2	2	A.
Nebraska	113	T.																																0	0	T.
		A.																				1												1	1	A.
Nevada	48	T.																																0	0	T.
		A.	1	1								2	1	1																				6	5	A.
New Hampshire	26	T.																																0	0	T.
		A.	2																		3					1								6	3	A.
New Jersey	58	T.							1				1																					2	2	T.
		A.								1											3													4	2	A.
New Mexico	26	T.																																0	0	T.
		A.																																0	0	A.
New York	89	T.																																0	0	T.
		A.	1	1															1															3	3	A.
North Carolina	52	T.								7			1	3	1			2			5						1							20	7	T.
		A.																												1				1	1	A.
North Dakota	37	T.																																0	0	T.
		A.															1	9						1						1	2			14	5	A.
Ohio	153	T.					15	6				1			1	1	1	1					4				2							32	9	T.
		A.		1								1											1					2			1			6	5	A.
Oklahoma	14	T.																																0	0	T.
		A.																																0	0	A.
Oregon	60	T.																																0	0	T.
		A.																																0	0	A.
Pennsylvania	80	T.					2	5																				2						9	3	T.
		A.											1								2							1						4	3	A.
Rhode Island	8	T.																																0	0	T.
		A.																																0	0	A.
South Carolina	35	T.								5	3	1																		2			1	12	5	T.
		A.																																0	0	A.
South Dakota	41	T.																																0	0	T.
		A.																										1	1					2	2	A.
Tennessee	42	T.						2	6													1	5											14	4	T.
		A.																																0	0	A.
Texas	79	T.																									2		2	4				8	3	T.
		A.																																0	0	A.
Utah	39	T.																1																1	1	T.
		A.																																0	0	A.
Vermont	14	T.																																0	0	T.
		A.	1			1					1										2													5	4	A.
Virginia	39	T.												3				1																4	2	T.
		A.				1								1																				2	2	A.
Washington	54	T.														2																	1	3	2	T.
		A.																		1														1	1	A.
West Virginia	41	T.																																0	0	T.
		A.																																0	0	A.
Wisconsin	66	T.																		1		2	4											7	3	T.
		A.	1												1		1	2	2	1				1	1			1	1	1				13	11	A.
Wyoming	12	T.																					1											1	1	T.
		A.																										1	1					2	2	A.
Sums	2,622	T.	1	0	2	0	19	30	31	23	9	4	2	6	3	6	18	35	5	2	9	38	92	1	2	9	25	6	2	7	0	0	3	390		T.
		A.	18	3	0	3	0	1	0	1	3	3	2	4	4	1	3	15	4	3	16	2	1	3	2	2	3	8	5	4	6	0	2	122		A.

TABLE XI.—*Hourly sunshine as deduced from sunshine recorders, January, 1895.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Monthly summary.			
		A. M.								P. M.								Instrumental record.			Personal estimate.
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Per cent of possible.	
																		Hours.	Hours.		
Atlanta, Ga	T.	......	......	......	19	26	35	51	52	53	50	52	49	39	33	......	......	134.2	317.1	42	39
Baltimore, Md	T.	......	......	......	27	42	53	65	74	69	60	56	45	39	39	......	......	162.4	308.1	54	44
Bismarck, N. Dak	P.	......	......	......	40	42	53	55	55	48	57	52	47	44	30	......	......	141.6	280.1	51	40
Boston, Mass	T.	......	......	......	38	42	45	47	50	49	55	59	54	43	33	......	......	143.3	295.4	49	40
Buffalo, N. Y	T.	......	......	......	1	8	21	33	40	41	40	36	36	21	11	......	......	85.3	294.0	29	20
Chicago, Ill	T.	......	......	......	29	24	47	54	58	58	55	49	35	41	9	......	......	185.5	296.4	46	42
Cincinnati, Ohio	P.	......	......	......	32	38	37	47	46	47	47	49	40	35	47	......	......	128.5	304.1	42	38
Cleveland, Ohio	P.	......	......	......	7	14	24	30	28	30	34	33	22	14	5	......	......	72.6	297.0	24	26
Columbus, Ohio	T.	......	......	......	0	13	31	39	50	47	42	40	29	21	46	......	......	97.5	301.6	32	28
Denver, Colo	P.	......	......	......	64	69	80	84	79	76	84	80	68	44	2	......	......	219.6	301.9	73	55
Des Moines, Iowa	T.	......	......	......	41	47	47	62	67	75	68	61	51	55	47	......	......	172.2	297.0	58	52
Detroit, Mich	T.	......	......	......	22	19	38	43	60	68	64	61	41	31	42	......	......	135.0	294.1	46	37
Dodge City, Kans	P.	......	......	......	37	49	52	48	44	60	69	64	49	41	30	......	......	157.6	307.2	51	50
Eastport, Me	P.	......	......	......	40	41	50	48	42	45	47	47	39	37	67	......	......	126.0	286.1	44	36
Galveston, Tex	P.	......	......	29	32	47	54	57	59	55	57	56	52	40	18	......	......	161.5	326.2	50	51
Helena, Mont	P.	......	......	......	12	14	34	41	36	33	41	45	30	21	0	......	......	90.9	281.0	32	33
Kansas City, Mo	P.	......	......	......	62	52	55	62	60	64	61	47	46	58	73	......	......	173.2	303.5	57	55
Key West, Fla	T.	......	......	59	63	69	75	86	89	90	93	91	80	68	64	......	......	264.8	334.1	79	65
Little Rock, Ark	T.	......	......	......	33	34	39	38	41	43	40	41	34	29	35	......	......	117.1	314.8	37	29
Louisville, Ky	T.	......	......	......	32	38	38	40	45	45	43	40	46	48	58	......	......	128.1	305.9	42	33
Marquette, Mich	T.	......	......	......	7	16	38	61	73	82	73	53	42	22	0	......	......	142.4	280.9	51	27
Memphis, Tenn	P.	......	......	......	45	48	51	45	42	39	37	29	32	28	41	......	......	124.3	314.6	40	40
New Haven, Conn	T.	......	......	......	43	41	52	60	65	74	73	62	53	41	12	......	......	168.8	297.6	57	50
New Orleans, La	T.	......	......	8	10	27	48	52	54	51	47	45	45	35	32	......	......	138.6	326.0	43	41
New York, N. Y	T.	......	......	......	32	50	60	71	77	80	80	81	70	47	47	......	......	198.0	298.5	66	38
Norfolk, Va	T.	......	......	......	41	59	66	77	75	74	70	68	68	56	35	......	......	202.5	309.2	65	55
Philadelphia, Pa	T.	......	......	......	33	44	55	59	64	67	65	50	52	42	29	......	......	161.4	301.2	54	38
Portland, Me	T.	......	......	......	19	43	57	61	64	66	62	60	51	22	14	......	......	153.0	290.8	53	45
Portland, Oreg	T.	......	......	......	4	5	15	28	37	37	35	29	16	13	0	......	......	66.7	287.3	23	25
Do	P.	......	......	......	4	4	15	21	24	16	18	13	7	6	0	......	......	38.5	287.3	13	25
Rochester, N. Y	T.	......	......	......	7	7	25	29	42	45	47	43	32	31	78	......	......	93.6	293.8	32	28
St. Louis, Mo	T.	......	......	......	36	39	56	63	65	74	70	70	67	67	82	......	......	187.7	304.5	62	59
Salt Lake City, Utah	T.	......	......	......	13	14	35	55	68	58	62	49	35	26	5	......	......	126.3	296.9	43	20
San Diego, Cal	P.	......	......	40	52	61	74	72	68	68	68	73	67	57	53	......	......	210.3	318.2	66	58
San Francisco, Cal	T.	......	......	......	26	56	65	75	71	76	75	72	55	36	43	......	......	188.2	307.0	61	44
Santa Fe, N. Mex	P.	......	......	......	49	63	72	72	71	75	66	70	64	62	56	......	......	207.1	312.3	66	55
Savannah, Ga	P.	......	......	25	39	44	54	51	54	52	54	54	52	39	39	......	......	156.5	320.5	49	41
Seattle, Wash	T.	......	......	......	10	10	16	22	42	42	40	27	21	15	......	......	......	71.9	277.3	26	18
Spokane, Wash	P.	......	......	......	10	13	20	27	29	24	30	29	28	2	......	......	......	67.2	275.3	24	18
Tucson, Ariz	P.	......	......	71	64	67	66	60	59	65	73	73	68	63	60	......	......	210.5	319.8	66	50
Vicksburg, Miss	T.	......	......	25	16	20	29	30	39	43	52	53	51	52	53	......	......	124.3	319.8	39	37
Washington, D. C	P.	......	......	......	28	39	44	48	38	30	33	41	44	42	47	......	......	118.4	304.3	39	36
Wilmington, N. C	T.	......	......	......	32	48	54	61	61	61	59	49	49	38	29	......	......	160.0	315.5	51	47

TABLE XII.—*Hourly precipitation, January, 1895.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Total.
Atlanta, Ga.*	0.02	0.04	0.05	0.49	0.27	0.12	0.21	0.15	0.04	0.07	0.12	0.29	0.18	0.55	0.32	0.43	0.63	0.48	0.28	0.07	0.01	0.01	0.02	0.04	5.58
Baltimore, Md.*	0.19	0.21	0.22	0.50	0.13	0.14	0.06	0.05	0.07	0.14	0.08	0.15	0.22	0.15	0.16	0.14	0.12	0.13	0.14	0.38	0.26	0.51	0.25	0.18	4.67
Boston, Mass	0.12	0.06	0.10	0.21	0.37	0.14	0.14	0.15	0.22	0.24	0.15	0.16	0.16	0.15	0.16	0.25	0.19	0.13	0.11	0.16	0.12	0.12	0.11	0.11	3.83
Buffalo, N. Y	0.12	0.13	0.14	0.16	0.14	0.17	0.16	0.15	0.25	0.29	0.28	0.31	0.22	0.17	0.21	0.21	0.20	0.13	0.14	0.20	0.12	0.16	0.23	0.15	4.44
Cincinnati, Ohio*	0.45	0.26	0.22	0.26	0.16	0.14	0.09	0.04	0.05	0.08	0.12	0.07	0.14	0.23	0.30	0.36	0.39	0.50	0.22	0.29	0.31	0.35	0.61	0.42	6.06
Cleveland, Ohio*	0.08	0.13	0.12	0.10	0.10	0.08	0.05	0.08	0.03	0.05	0.20	0.10	0.05	0.06	0.11	0.09	0.06	0.08	0.12	0.12	0.09	0.12	0.14	0.10	2.34
Detroit, Mich.*	0.13	0.11	0.07	0.08	0.09	0.08	0.09	0.11	0.15	0.12	0.07	0.08	0.06	0.07	0.06	0.17	0.08	0.09	0.08	0.15	0.17	0.22	0.21	0.22	2.76
Eastport, Me	0.03	0.02	0.02	T.	0.00	0.02	0.07	0.10	0.06	0.12	0.07	0.09	0.09	0.05	0.10	0.14	0.14	0.06	0.06	0.07	0.06	0.07	0.08	0.03	2.62
Galveston, Tex	T.	T.	T.	0.01	T.	0.55	0.01	0.25	0.03	0.10	T.	T.	T.	T.	T.	T.	T.	T.	0.17	T.	0.02	0.05	T.	T.	1.19
Jacksonville, Fla	0.29	0.04	0.15	0.15	0.66	0.10	0.10	0.10	0.05	0.04	0.11	0.06	0.07	1.23	0.20	0.19	0.19	0.16	0.02	0.09	0.15	0.18	0.13	0.17	4.63
Jupiter, Fla	0.04	T.	0.28	0.09	0.24	0.02	0.02	0.03	0.02	T.	0.07	0.45	0.87	0.36	0.00	T.	0.03	0.00	0.00	T.	0.00	0.26	0.35	0.12	3.25
Key West, Fla	0.22	0.00	0.00	0.00	0.00	0.21	0.00	T.	T.	0.01	0.01	0.02	0.51	0.26	T.	0.11	0.01	0.06	T.	0.00	0.13	1.16	0.42	0.19	3.26
Little Rock, Ark	0.80	0.61	0.48	0.50	0.38	0.06	0.06	0.17	0.12	0.14	0.09	0.12	0.11	0.20	0.28	0.12	0.05	0.13	0.17	0.07	0.35	0.85	0.83	0.26	7.04
Louisville, Ky.*	0.46	0.20	0.14	0.17	0.11	0.12	0.13	0.13	0.15	0.11	0.26	0.18	0.19	0.26	0.17	0.19	0.12	0.15	0.12	0.11	0.13	0.18	0.38	0.38	4.54
Memphis, Tenn	0.16	0.16	0.56	0.35	0.54	0.25	0.19	0.83	0.51	0.18	0.20	0.28	0.13	0.06	0.05	0.26	0.42	0.19	0.28	0.09	0.12	0.04	0.02	0.07	5.94
Nantucket, Mass.*	0.09	0.12	0.10	0.07	0.09	0.13	0.40	0.38	0.19	0.28	0.29	0.18	0.20	0.20	0.12	0.08	0.06	0.08	0.07	0.16	0.17	0.20	0.14	0.09	3.89
New Orleans, La.*	0.04	0.04	0.11	0.03	0.02	T.	T.	0.11	T.	0.01	0.06	0.04	0.15	0.33	0.53	0.50	0.65	0.35	0.04	0.06	0.03	0.18	1.07	0.23	7.16
New York, N. Y	0.30	0.33	0.21	0.36	0.53	0.73	0.12	0.20	0.14	0.11	0.28	0.19	0.15	0.09	0.35	0.19	0.14	0.12	0.11	0.07	0.09	0.12	0.31	0.42	5.66
Norfolk, Va	0.18	0.06	0.05	0.03	0.30	0.14	0.15	0.10	0.17	0.12	0.19	0.14	0.63	0.32	0.11	0.03	0.07	0.09	0.11	0.25	0.31	0.33	0.26	0.25	4.39
Philadelphia, Pa.*	0.10	0.11	0.19	0.42	0.22	0.08	0.09	0.13	0.21	0.25	0.21	0.11	0.14	0.15	0.13	0.15	0.15	0.17	0.25	0.09	0.06	0.24	0.25	0.16	4.06
Portland, Oreg.*	0.26	0.25	0.27	0.28	0.27	0.26	0.31	0.26	0.43	0.45	0.49	0.39	0.41	0.48	0.57	0.43	0.32	0.34	0.34	0.35	0.39	0.33	0.32	0.34	8.54
St. Louis, Mo.‡	0.02	0.01	0.02	0.01	0.03	0.08	0.01	0.01	0.04	0.04	0.05	0.05	0.05	T.	0.01	0.07	0.02	T.	T.	0.03	0.03	0.03	0.01	T.	0.62
St. Paul, Minn	0.07	0.05	0.04	0.04	0.08	0.01	0.02	0.03	0.01	0.12	0.10	0.12	0.08	0.05	0.02	0.01	0.02	0.02	0.01	0.01	0.02	T.	0.08	0.04	1.06
San Diego, Cal.*	0.11	0.56	0.22	0.16	0.19	0.13	0.22	0.17	0.46	0.42	0.30	0.11	0.09	0.17	0.56	0.36	0.31	0.25	0.14	0.07	0.22	0.45	0.16	0.09	7.18
San Francisco, Cal	0.35	0.16	0.36	0.45	0.14	0.26	0.33	0.40	0.33	0.21	0.14	0.13	0.35	0.39	0.46	0.28	0.34	0.52	0.39	0.33	0.15	0.07	0.04	0.25	6.83
Savannah, Ga	0.28	0.55	0.60	0.17	0.15	0.22	0.32	0.46	0.32	0.31	0.22	0.18	0.18	0.10	0.11	0.18	0.18	0.05	0.05	0.04	0.04	0.06	0.10	0.11	5.02
Seattle, Wash	0.23	0.25	0.12	0.21	0.46	0.38	0.26	0.31	0.18	0.22	0.35	0.36	0.39	0.29	0.18	0.13	0.08	0.09	0.04	0.11	0.20	0.19	0.17	0.21	5.97
Vicksburg, Miss	1.24	0.16	0.15	0.14	0.00	0.00	T.	0.34	0.39	0.85	0.34	0.13	0.56	0.07	0.06	0.02	0.07	0.21	0.48	0.46	0.36	0.17	0.15	0.21	6.56
Washington, D. C	0.51	0.27	0.16	0.13	0.10	0.06	0.04	0.10	0.12	0.09	0.06	0.23	0.20	0.11	0.11	0.07	0.07	0.14	0.21	0.32	0.24	0.39	0.29	0.34	4.36
Wilmington, N. C	0.12	0.08	0.08	0.11	0.12	0.08	0.14	0.27	0.11	0.20	0.16	0.19	0.14	0.10	0.16	0.14	0.09	0.19	0.16	0.24	0.20	0.30	0.44	0.80	4.80

* Record incomplete. ‡ Record for 26 days.

TABLE XIII.—*Excessive precipitation, by stations, for January, 1895.*

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Cordova		3.20	7-8			
Daphne		2.82	15-16			
Demopolis		3.27	8			
Elba		2.70	15	2.70	1 00	15
Do		2.75	24			
Florence *a*		4.03	7-8			
Florence *b*		2.77	7			
Greensboro		4.00	7	4.00	4 00	7
Livingston		3.83	7-8			
Maple Grove	10.90	2.50	7-8			
Marion		2.60	7-8			
Oxanna		3.55	7			
Scottsboro	10.76	2.62	8			
Do		2.64	19-20			
Union		3.90	8			
Wilsonville		3.40	6-7			
Arizona.						
Flagstaff	12.60	2.80	16			
Arkansas.						
Arkadelphia		2.50	20			
Helena *a*		2.90	15			
Do		3.45	19-20			
Hot Springs *b*		2.75	6-7			
Little Rock		3.13	6-7	1.00	0 52	6
New Gascony		2.80	19-20			
Stuttgart		3.75	19-20			
California.						
Berkeley	10.88					
Bear Valley	29.22	4.70	4			
Do		9.00	16-18			
Cape Mendocino Lighthouse	12.00					
Chicago Park	18.17	4.88	3-4			
Chico	11.77					
Cloverdale	26.45	5.80	4			
Do		2.67	7			
Do		8.64	21-22			
Crescent City	12.16					
Crescent City Lighthouse	11.40					
Delta	18.55					
Dunnigan	10.38					
Edmanton	26.11	3.70	4			
Do		6.03	21-22			
Escondido	10.55					
Fall Brook	12.52	3.19	18-19			
Folsom City *b*	11.24	3.41	3-4			
Fordyce Dam	31.34	6.48	4			
Do		3.05	8			
Do		2.85	16			
Do		2.52	18			
Do		7.43	21-22			
Fort Ross	28.50					
Georgetown	20.52	2.75	5			
Grass Valley	22.26	6.31	4			
Greenville	23.63	6.16	3-4			
Do		2.50	17			
Do		2.86	21			
Healdsburg	27.69	6.19	2-4			
Do		12.51	21-23			
Hendersons Ranch		3.00	19			
Hydesville	10.45					
Iowa Hill	18.64	5.05	3-5			
Jackson	12.04	3.12	4			
Julian	16.32	3.60	17			
Kennedy Gold Mine	13.11					
Kono Tayee	14.45	4.22	22			
La Porte	22.01					
Lick Observatory	10.00					
Los Gatos *b*	14.67	4.55	4			
Malakoff Mine	24.40	8.10	3-4			
Mariposa	11.79	3.67	4			
Middletown	28.90	8.36	2-5			
Mills College		2.95	4			
Mokelumne Hill	10.06					
Mount Glenwood	15.40	5.00	3-4			
Nevada City	22.87	6.00	4			
Newcastle *a*	13.10	3.70	4			
Oakland *a*	11.32					
Oleta	13.25	3.95	4			
Ontario *b*	10.65					
Orangevale		2.85	4			
Ormonde	22.23	7.71	3-4			
Do		3.40	17			
Oroville *b*	11.92					
Palermo	10.08	3.13	4			
Pilot Creek	20.54	3.96	4			
Do		5.65	16-17			
Placerville *b*	17.85	4.18	4			
Do		3.76	16			
Point Arena Lighthouse	13.61					
Point Bonita Lighthouse	12.16					
Point George Lighthouse	10.04					
Poway	12.65	3.05	15			
Redding *b*	12.84					
Represa	11.36					
Rosewood	11.93	2.66	20-21			
Sacramento (W. B)		2.66	3-4			
Sacramento *a*		2.80	3-4			
San Luis Obispo		2.63	4-5			
San Rafael	18.75	6.15	3			
Do		2.70	7			
Do		2.60	21			

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
California—Cont'd.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Santa Rosa	18.42					
Shasta Springs	11.82					
Skye Valley	15.74	4.50	16			
Summerdale	16.04	3.45	4			
Do		2.55	18			
Susanville	10.29	3.40	3-4			
Tehama	11.23					
Truckee	11.73					
Ukiah	19.20	4.07	4			
Do		5.70	21-22			
Upper Mattole	23.37	4.41	4			
Do		3.80	13			
Vacaville	12.81	4.51	3-4			
Walnut Creek		3.50	4			
West Point	14.80					
Wheatland		2.50	4			
Wire Bridge	14.44					
Colorado.						
Rico		2.53	17			
Ruby	14.44	3.62	17			
Florida.						
Jacksonville				1.13	1 00	16
Jupiter				1.00	1 00	26
Key West				1.22	1 00	9
Lake City		3.40	16			
Moseley Hall		2.75	8-9			
Do		2.53	16			
Georgia.						
Adairsville		3.41	8			
Alapaha	10.77					
Albany	10.40	3.05	15-16			
Blakely	10.10	3.25	16			
Brag		3.47	9			
Camak		3.39	9-10			
Clayton	10.49	2.58	9			
Dahlonega	10.44					
Dublin *b*		2.60	9			
Do		2.85	25			
Hawkinsville		3.40	9			
Do		2.80	25			
Louisville		2.96	26			
Macon *b*		3.80	8-9			
Marshallville		2.80	8-9			
Do		2.51	25			
Millen		2.71	25			
Monticello		2.50	10			
Piscola	11.75	3.20	8-9			
Do		3.00	16			
Quitman	11.64	3.70	8-9			
Do		2.63	25-26			
Rome	10.29	3.80	7-8			
Thomasville	10.17					
Idaho.						
Fort Sherman		2.70	4			
Indiana.						
Butlerville		4.06	6-7			
Huntingburg	12.50	10.00	5-6			
Madison		4.89	6-7			
Marengo		5.50	6			
Seymour		3.35	6			
Shelbyville		2.75	5			
Sunman		3.00	6			
Vevay		4.55	6-7			
Louisiana.						
Donaldsonville		2.79	6-7			
Emilie		5.10	7			
Franklin		3.25	7-8			
New Orleans		3.99	7-8	1.12	1 00	7
Paincourtville		3.10	7-8			
Southern University		7.20	7-8			
Sugar Experiment Station		5.65	7-8			
Thibodeaux		3.20	7-8			
West End		6.60	7-8			
Mississippi.						
Agricultural College		3.41	7			
Canton		3.18	7-8			
French Camps		2.57	7			
Louisville		3.33	7-8			
Macon		3.03	7-8			
Meridian		4.41	7-8	2.50	2 00	7
Moss Point		3.60	14			
Palo Alto	10.92					
Topton		4.80	7-8			
Vicksburg		2.68	7-8	1.15	1 00	15-16
Waynesboro *a*		3.10	7-8			
Woodville		3.08	25			
Nevada.						
Palmetto		2.80	18			
North Carolina.						
Fair Bluff		3.34	9-10			
Louisburg		3.20	8-9			
Lynn		2.60	10			
Lumberton		3.50	10			
Moncure		2.77	8-9			
Pittsboro		2.80	9			
Do		2.85	11			
Rockingham		4.58	8-9			
Saxon		3.60	8-9			
Ohio.						
Cincinnati		3.57	6-7			
Fayetteville		3.25	6-7			

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Oregon.	*Inches.*	*Inches.*		*Ins.*	*h. m.*	
Albany *a*	12.25	3.05	2			
Astoria	14.84	4.93	2-3			
Aurora	10.54					
Bandon	22.74	2.99	2			
Do		4.07	12			
Do		3.00	21			
Cascade Locks	12.71					
Cornelius	11.99					
Corvallis *a*	11.65	3.00	2			
Corvallis (near)	13.96					
Detroit	14.10	2.91	2			
Gardiner	17.03	3.50	4			
Do		3.12	12			
Glenora	23.53	6.70	4-5			
Do		4.32	12			
Hood River (near)	10.85					
Hubbard	11.08	2.63	3			
Lafayette	10.43					
Langlois	24.73	5.30	12			
McMinnville *a*	11.42					
Mount Angel	11.21	3.10	2			
Nehalem	19.47					
Newport	13.68	2.82	3			
Portland		2.80	2-3			
Salem *b*	13.72	2.68	3			
Sheridan	13.29					
Silverton	10.87					
Siskiyou	10.10					
Springbrook	12.32	3.30	2			
West Fork	13.04					
South Carolina.						
Blackville		2.61	25-26			
Camden		2.60	7-8			
Central		3.38	15-16			
Columbia		2.80	8-9			
Conway		3.80	9-10			
Georgetown		3.05	17			
Greenwood	11.83	9.13	8-10			
Little Mountain		2.77	8-9			
Longshore		4.95	8-9			
Mount Carmel		2.57	9-10			
Pinopolis		2.82	25-26			
St. George		2.55	30-31			
St. Stephens		2.70	25-26			
Santuck		2.62	8			
Statesburg		3.21	9			
Trenton		2.64	8-9			
Watts	10.30	5.40	9-10			
Tennessee.						
Byrdstown		2.51	7-8			
Lynnville		2.53	7			
Memphis		2.70	14-15			
Palmetto		3.07	7			
Parkville		3.50	8			
Tullahoma		3.00	7			
Texas.						
Grape Vine				1.74	0 30	24
Longview		6.00	24-25			
Marshall		5.80	24-25			
Virginia.						
Avon		2.50	8			
Lexington		2.51	9-10			
Lynchburg		2.80	9-10			
Washington.						
Aberdeen	10.89					
Cascade Tunnel	13.04					
East Clallam	15.44	3.10	9-10			
Do		2.50	12			
Fort Canby	11.52	4.29	2-3			
Index	13.91					
Neah Bay	12.44	2.85	9-10			
Pysht	12.07	2.67	9-10			
Tatoosh Island	12.50	2.58	9-10			
Union City	12.25					

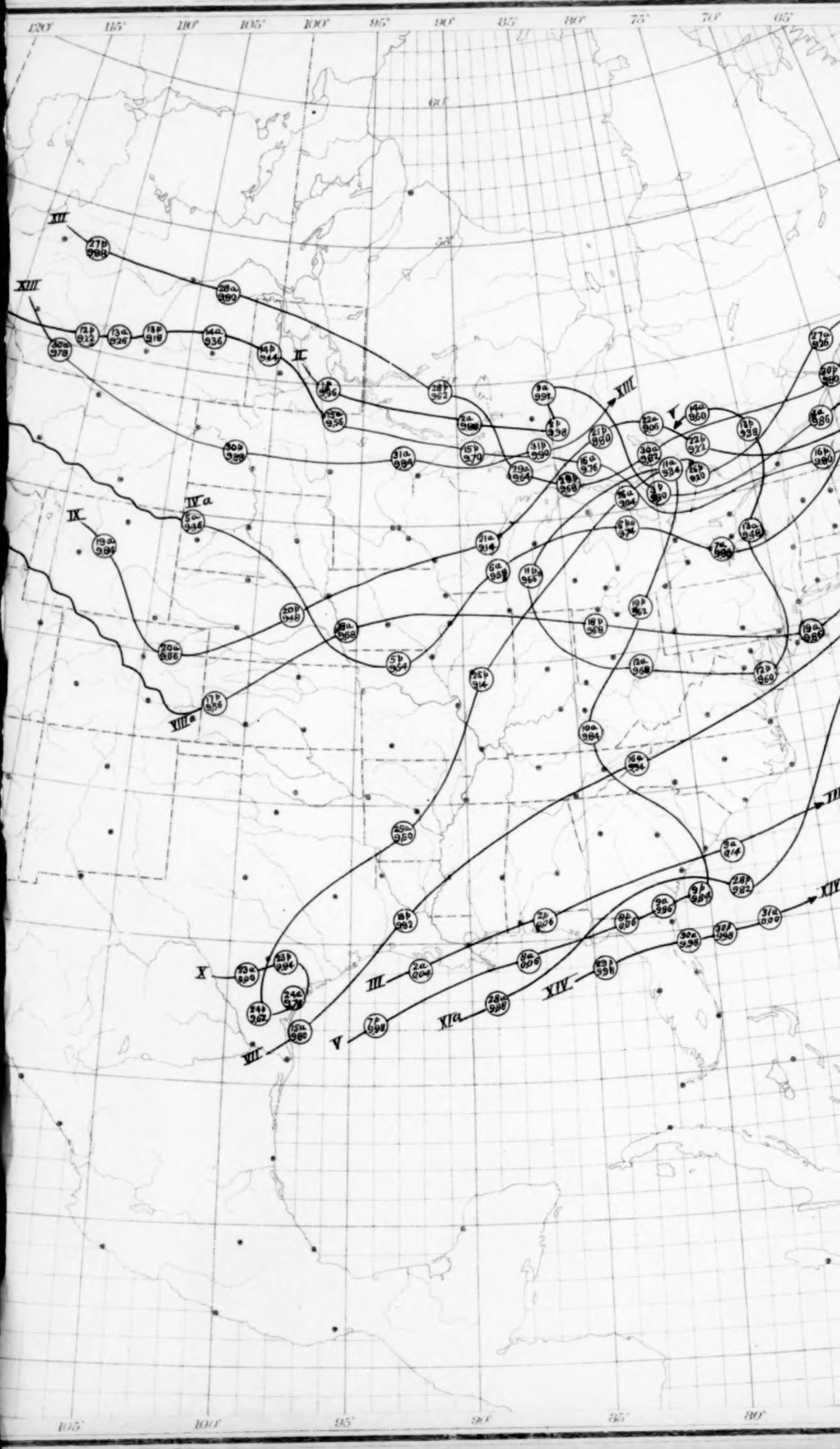
TABLE XIV.—*Maximum rainfall in one hour or less, January*, 1895.

Stations.	Maximum rainfall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga.*	0.10	21,28	0.16	21	0.40	28
Baltimore, Md.*	0.15	26	0.30	26	0.45	26
Boston, Mass	0.05	11	0.09	11	0.27	11
Buffalo, N. Y	0.02	10	0.03	10	0.12	10
Cincinati, Ohio*	0.08	6	0.13	6	0.47	6
Cleveland, Ohio*	0.01	10	0.02	10	0.10	10
Detroit, Mich.*	0.01	21	0.02	21	0.08	21
Eastport, Me	0.02	22	0.04	22	0.11	22
Galveston, Tex	0.20	28	0.30	28	0.54	28
Jacksonville, Fla	0.35	16	0.50	16	1.13	16
Jupiter, Fla	0.21	26	0.30	26	1.00	26
Key West, Fla	0.22	9	0.39	9	1.22	9
Little Rock, Ark	0.20	6	0.28	7	1.00	6
Louisville, Ky.*	0.05	7	0.10	7	0.31	7
Memphis, Tenn	0.10	21	0.15	21	0.40	7
Nantucket, Mass	0.09	11	0.15	11	0.25	11
New Orleans, La.*	0.40	7	0.67	7	1.12	7
New York, N. Y	0.09	26	0.18	26	0.72	26
Norfolk, Va	0.10	8,10	0.15	10	0.46	8
Philadelphia, Pa.*	0.04	10,26	0.06	26	0.88	26
Portland, Oreg	0.05	12	0.09	12	0.20	12
St. Paul, Minn	0.02	18	0.03	18	0.12	18
San Diego, Cal.*	0.20	19	0.25	19	0.43	16
San Francisco, Cal	0.07	16	0.10	16	0.31	16
Savannah, Ga	0.08	9	0.16	9	0.42	9
Seattle, Wash	0.03	11,12	0.05	11,12	0.20	12
Vicksburg, Miss	0.50	16	0.72	16	1.07	16
Washington, D. C	0.07	26	0.10	26	0.39	26
Wilmington, N. C	0.12	25	0.22	25	0.51	25

* Record incomplete.


NOTES.
The Roman letters show number and order of centers of low areas. The figures within the circles show the days of the month; the letters a and p indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.
The queries (?) on the tracks show that the centers could not be satisfactorily located.
Within each circle is given the lowest barometric reading reported near the center. A blank indicates that no reports were available.
A wavy line indicates the axis of a trough or long oval area of low pressure.
The dotted shading ( ) indicates fog belts.
The crosses (× × × × × ×) indicate the position in which field-ice or icebergs were observed.
UNITED STATES WEATHER BUREAU
Statute Miles
Kilometers

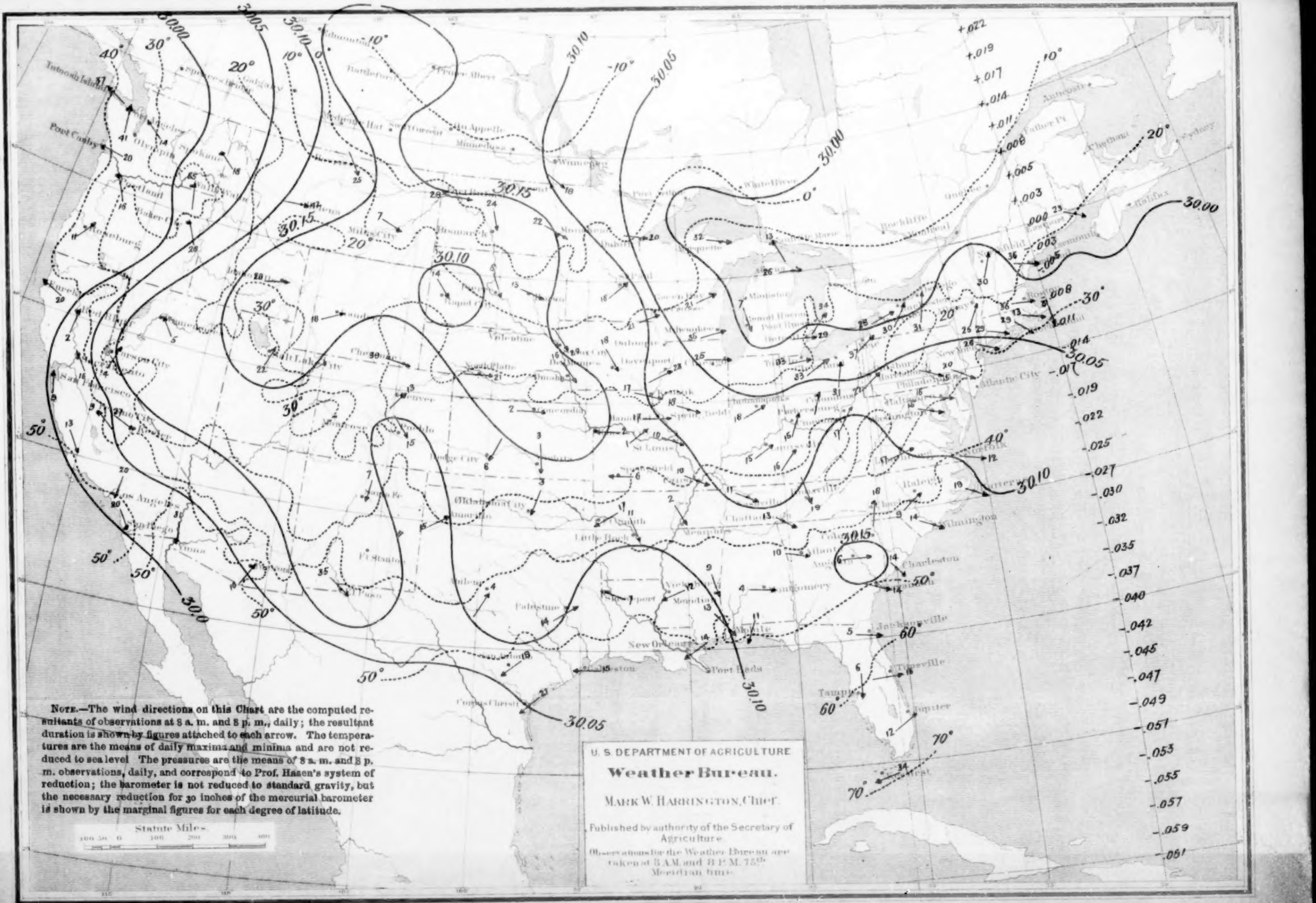
Chart I. Tracks of Centers of Low Areas. January, 1895.



65°
60°
55°
50°
45°
40°
35°
45°
40°
35°
30°
25°
20°
15°
80°
75°
70°
65°
60°
X
XII
IVa
I
VIIIa
VI
II
IX
VII
XIa
III
XIV

Chart II. Isobars, Isotherms, and Resultant Winds. January, 1895.

Chart II. Isobars, Isotherms, and Resultant Winds. January, 1895.

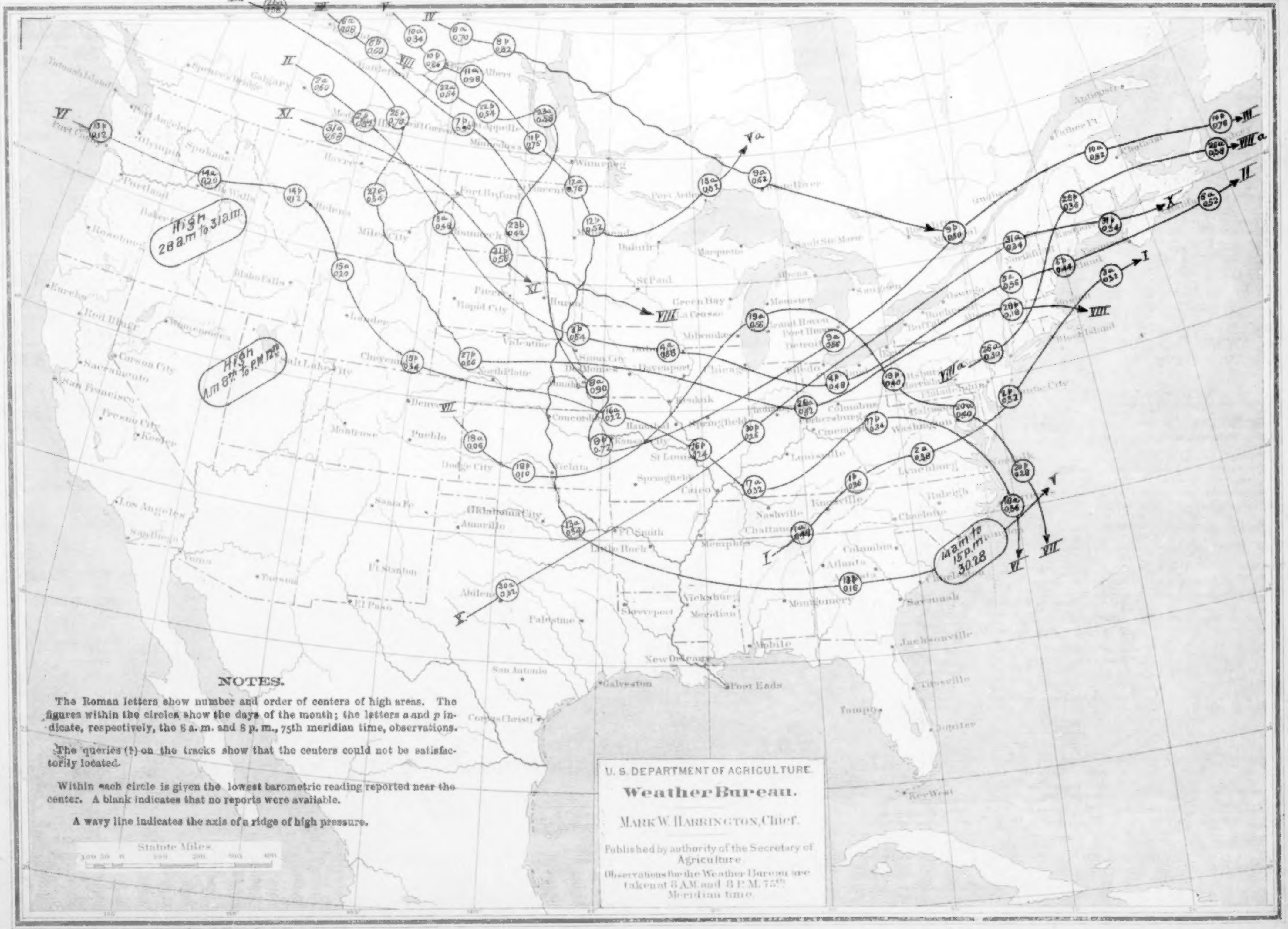


NOTE.—The wind directions on this Chart are the computed resultants of observations at 8 a. m. and 8 p. m., daily; the resultant duration is shown by figures attached to each arrow. The temperatures are the means of daily maxima and minima and are not reduced to sea level. The pressures are the means of 8 a. m. and 8 p. m. observations, daily, and correspond to Prof. Hazen's system of reduction; the barometer is not reduced to standard gravity, but the necessary reduction for 30 inches of the mercurial barometer is shown by the marginal figures for each degree of latitude.

Chart III. Total Precipitation, January, 1895.

Chart III. Total Precipitation. January, 1895.

Chart IV. Tracks of Centers of High Areas. January, 1895.



NOTES.

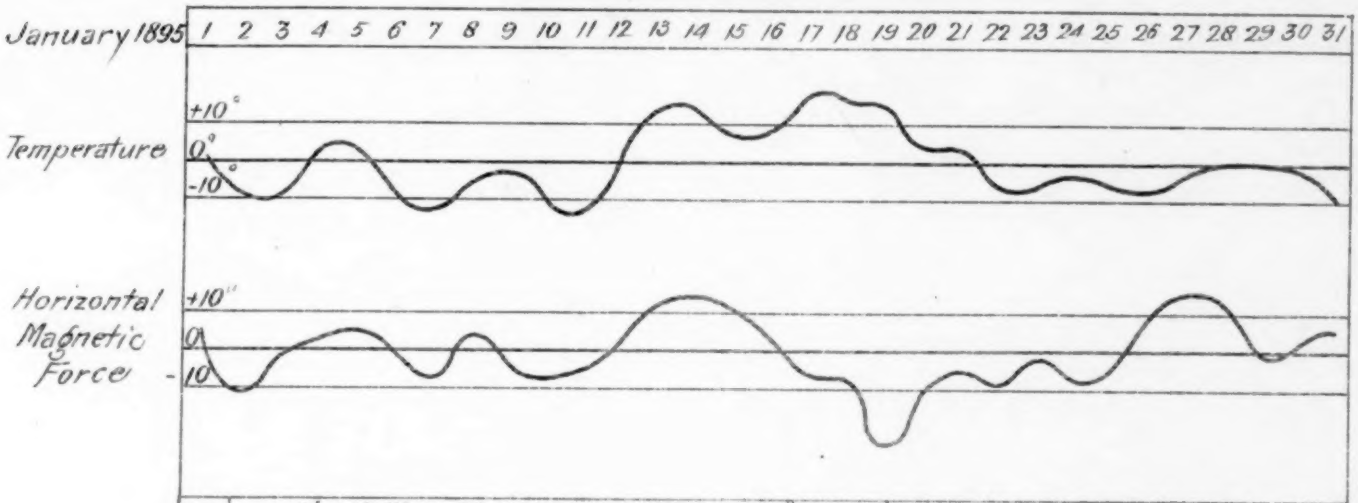
The Roman letters show number and order of centers of high areas. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.

The queries (?) on the tracks show that the centers could not be satisfactorily located.

Within each circle is given the lowest barometric reading reported near the center. A blank indicates that no reports were available.

A wavy line indicates the axis of a ridge of high pressure.

Chart V. Relative variations of the Northwest Temperatures and the Horizontal Magnetic Force of Toronto, Washington, and San Antonio.



January 1895	North West Temperatures							Horizontal Magnetic Force						
				Variations							Variations			
	Calgary	Williston	Sioux City	Calgary	Williston	Sioux City	Means +1°	Toronto	Washington	San Antonio	Toronto	Washington	San Antonio	Means +23
1	8	6	24	+3	-4	+2	+1	434.6	56.6	298.8	-20	-18	-16	+5
2	-9	-7	22	-13	-17	0	-9	433.8	54.3	290.4	-28	-41	-33	-11
3	-16	6	17	-19	-4	-5	-8	434.7	56.1	292.9	-19	-23	-28	0
4	-4	17	32	-6	+7	+10	+5	435.0	57.4	288.1	-16	-10	-38	+2
5	-2	9	31	-3	-1	+9	+3	435.5	58.4	286.0	-11	0	-42	+5
6	-10	-6	21	-10	-16	-1	-8	437.5	56.6	279.2	+9	-18	-56	+2
7	-24	7	11	-23	-3	-11	-11	435.9	55.6	280.0	-7	-28	-54	-7
8	-18	12	19	-16	+2	-3	-5	436.5	56.8	287.9	-1	-16	-38	+5
9	-12	8	25	-9	-2	+3	-2	435.0	56.1	287.2	-16	-23	-40	-3
10	-7	-12	14	-3	-22	-8	-10	433.6	56.3	289.0	-30	-21	-36	-6
11	-6	-7	-1	-1	-17	-23	-13	435.2	57.1	281.6	-14	-13	-51	-3
12	11	6	11	+17	-4	-11	+2	435.7	56.8	285.8	-9	-16	-43	0
13	15	23	29	+22	+13	+7	+15	437.0	57.2	294.2	+4	-12	-26	+12
14	17	16	31	+25	+6	+9	+14	436.5	57.7	294.7	-1	-7	-25	+12
15	5	5	28	+14	-5	+6	+6	436.1	57.9	294.1	-5	-5	-26	+11
16	-2	14	34	+8	+4	+12	+9	435.3	56.5	290.9	-13	-19	-32	+2
17	-5	31	46	+6	+21	+24	+16	434.7	55.2	288.2	-19	-32	-37	-6
18	-1	23	45	+11	+13	+23	+17	434.6	55.5	282.9	-20	-29	-48	-9
19	-2	11	52	+11	+1	+30	+15	433.4	53.6	274.8	-32	-48	-64	-25
20	-3	3	26	+11	-7	+4	+4	435.8	54.3	281.1	-8	-41	-51	-10
21	-4	-1	29	+11	-11	+7	+3	435.5	55.7	282.6	-11	-27	-48	-6
22	-12	-13	18	+4	-23	-4	-7	434.9	55.8	279.8	-17	-26	-54	-9
23	-13	-3	14	+4	-13	-8	-5	435.9	57.9	285.7	-7	-5	-66	-3
24	-8	-4	12	+10	-14	-10	-4	435.4	56.7	285.3	-12	-17	-67	-9
25	-4	-12	7	+15	-22	-15	-7	435.7	57.3	287.3	-9	-11	-63	-5
26	-13	-9	5	+7	-19	-17	-9	437.8	57.9	292.4	+12	-5	-53	+8
27	-7	-2	10	+14	-12	-12	-2	438.6	58.0	298.4	+20	-4	-41	+15
28	3	-7	9	+25	-17	-13	-1	437.1	58.9	297.7	+5	+5	-42	+12
29	-7	-4	10	+16	-14	-12	-2	435.3	56.9	297.0	-13	-15	-43	-1
30	-8	-9	15	+16	-19	-7	-2	435.6	57.8	294.9	-10	-6	-47	+2
31	-19	-11	4	+6	-21	-18	-10	435.8	57.4	299.7	-8	-10	-37	+5

Chart VI. Depth of Snowfall (inches) and Limits of Freezing Weather. January 1895.

Chart VI. Depth of Snowfall (inches) and Limits of Freezing Weather. January, 1895.

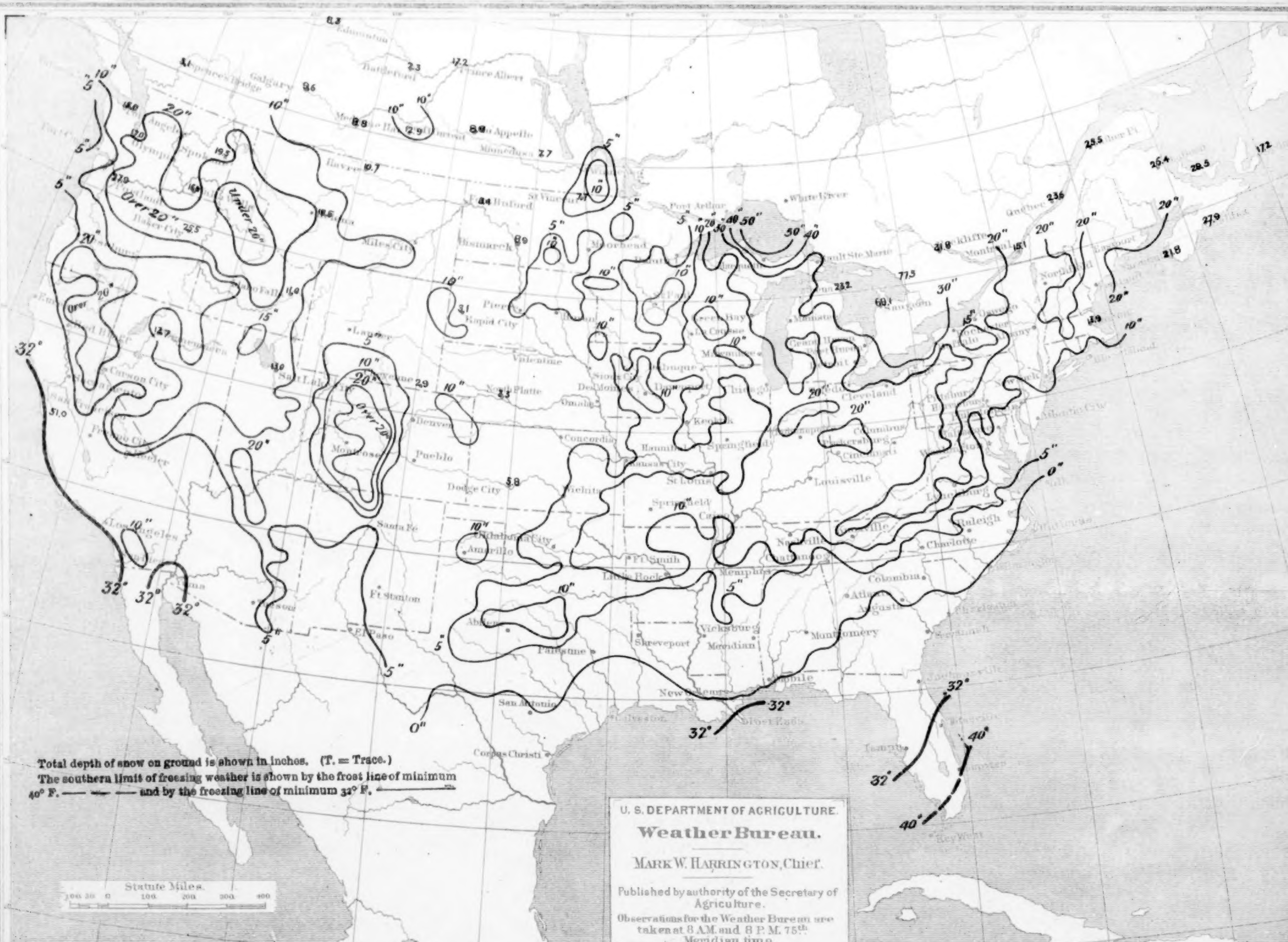


Chart VII. Depth of Snow lying on ground January 21, 1905.

Chart VII. Depth of Snow lying on ground January 31, 1895.

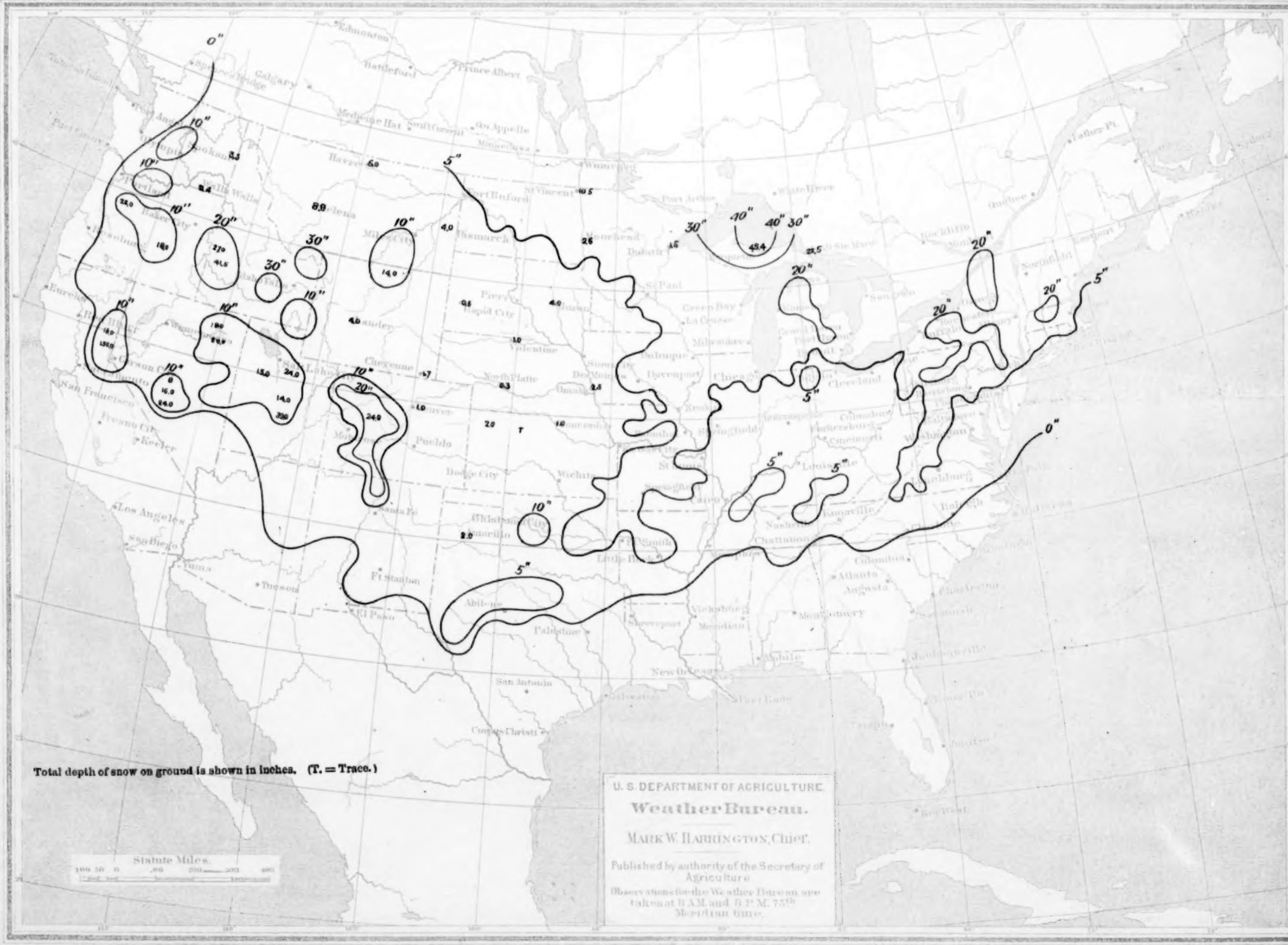


Chart 1

Saskatchewan Valley

Chart 1.

Saskatchewan Valley.

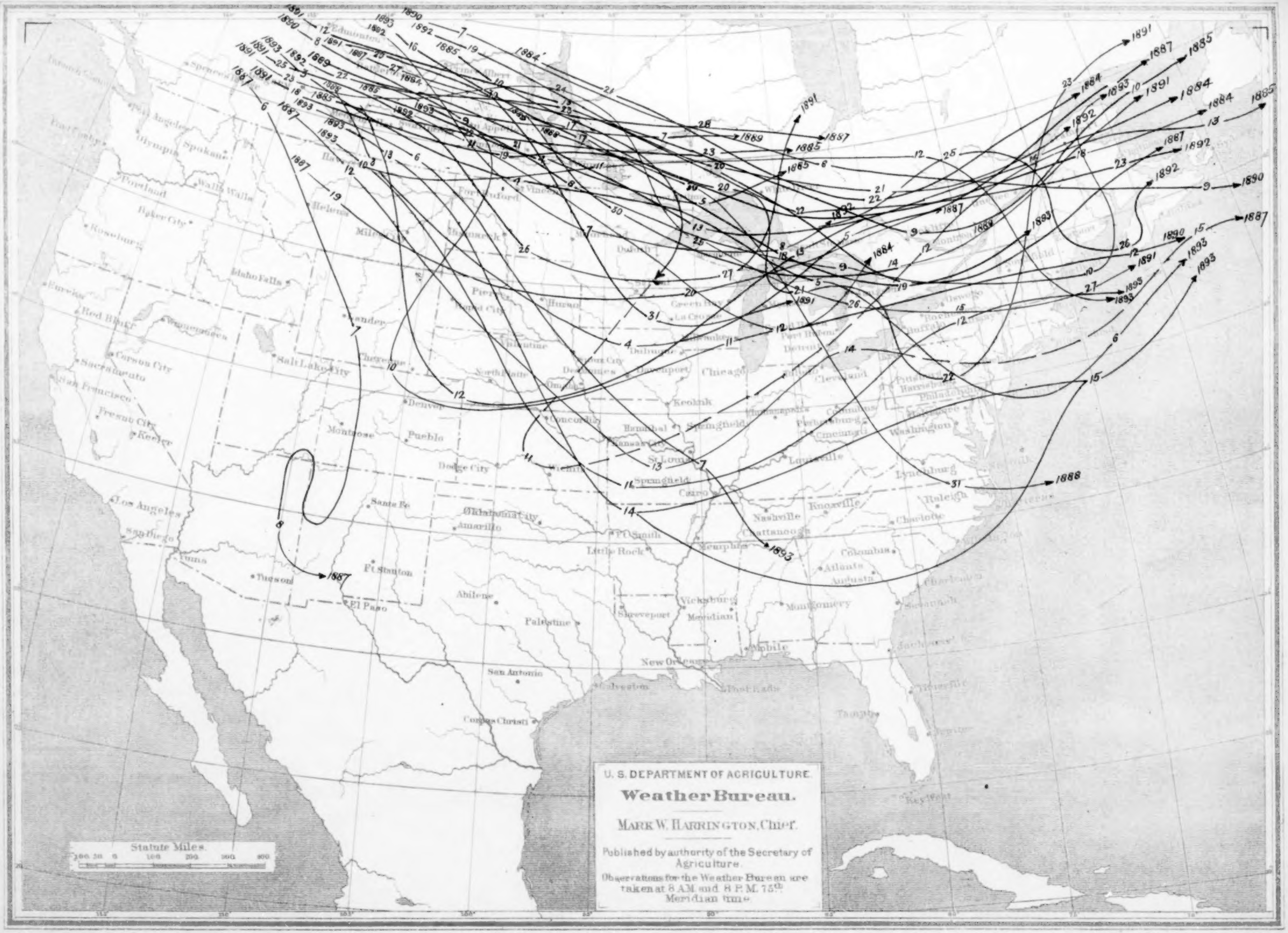


Chart 2.

Southwestern States.

Chart 3.

North Pacific Coast.

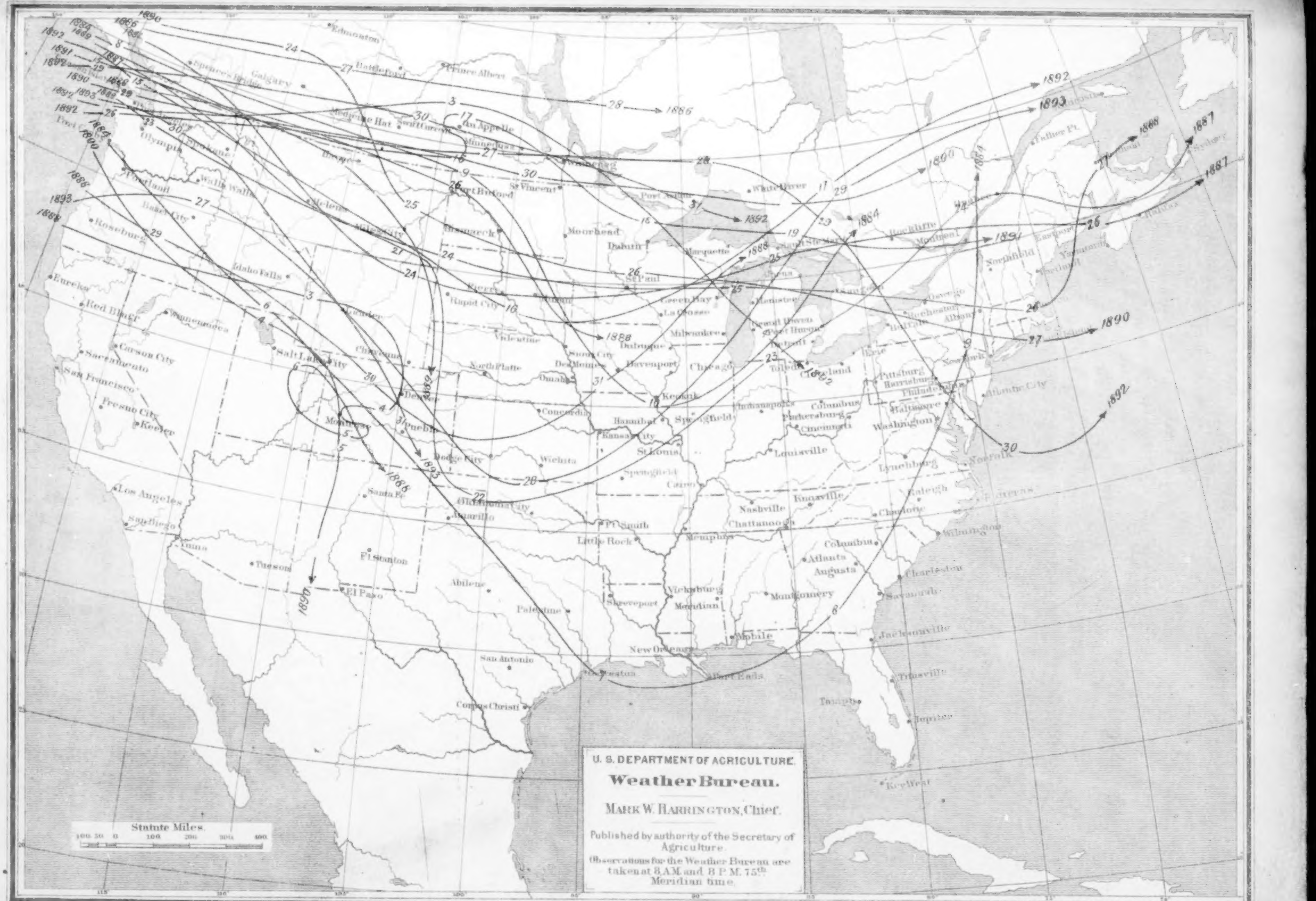

U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A.M. and 8 P.M. 75th Meridian time.
Statute Miles.

Chart 4.

Northeast Rocky Mountain Slope.

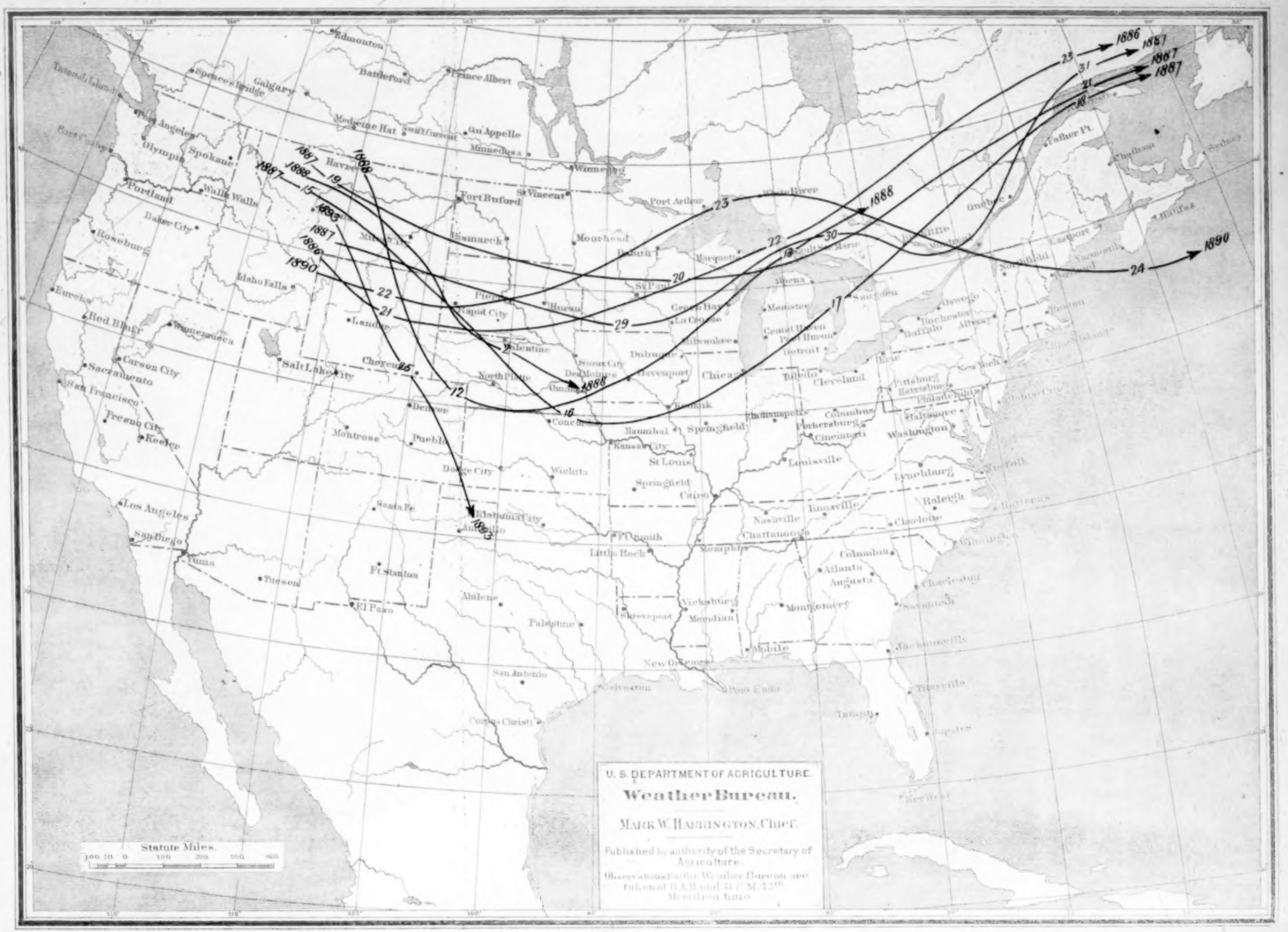


Chart 5.

Middle-Western States.

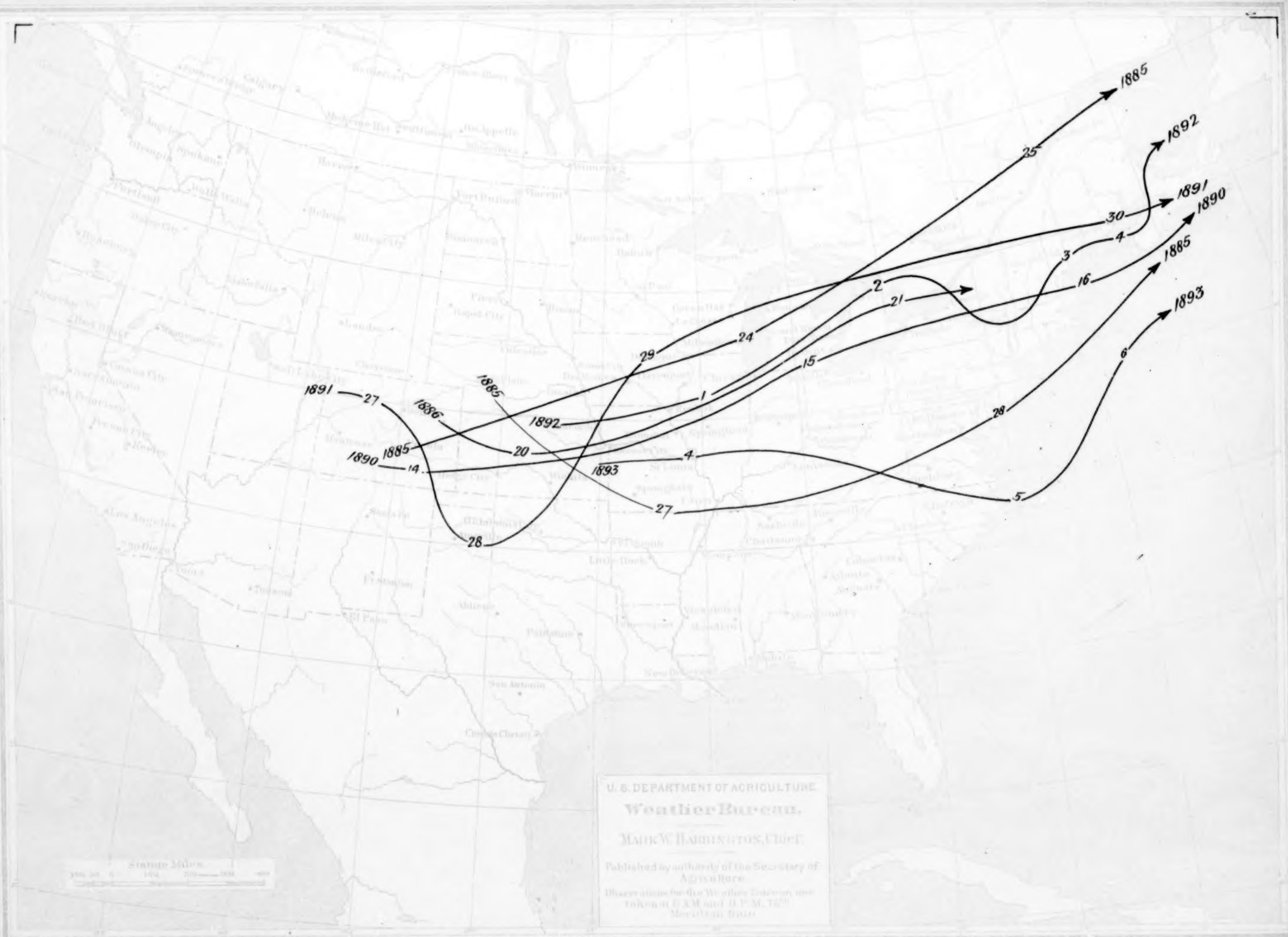

1885
1892
1891
1890
1885
1893
25
30
4
3
2
21
16
24
29
15
1
6
28
1891
27
1886
1885
1892
1885
1890
14
20
1893
4
27
5
28
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief.

Chart 6.

Ohio Valley and Lake Region.

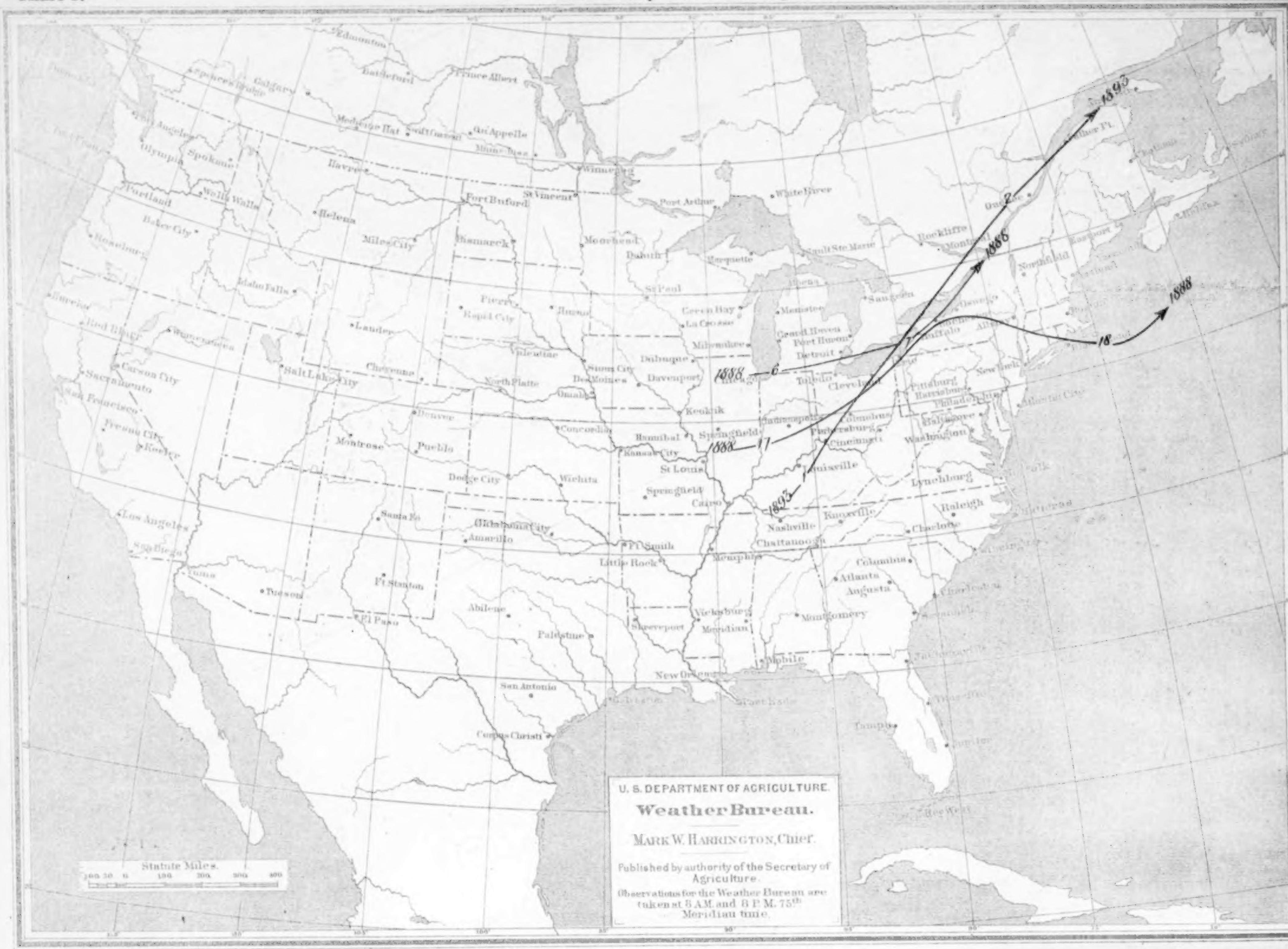


Chart 7.

Southwestern States.

Chart 7.

Southwestern States.

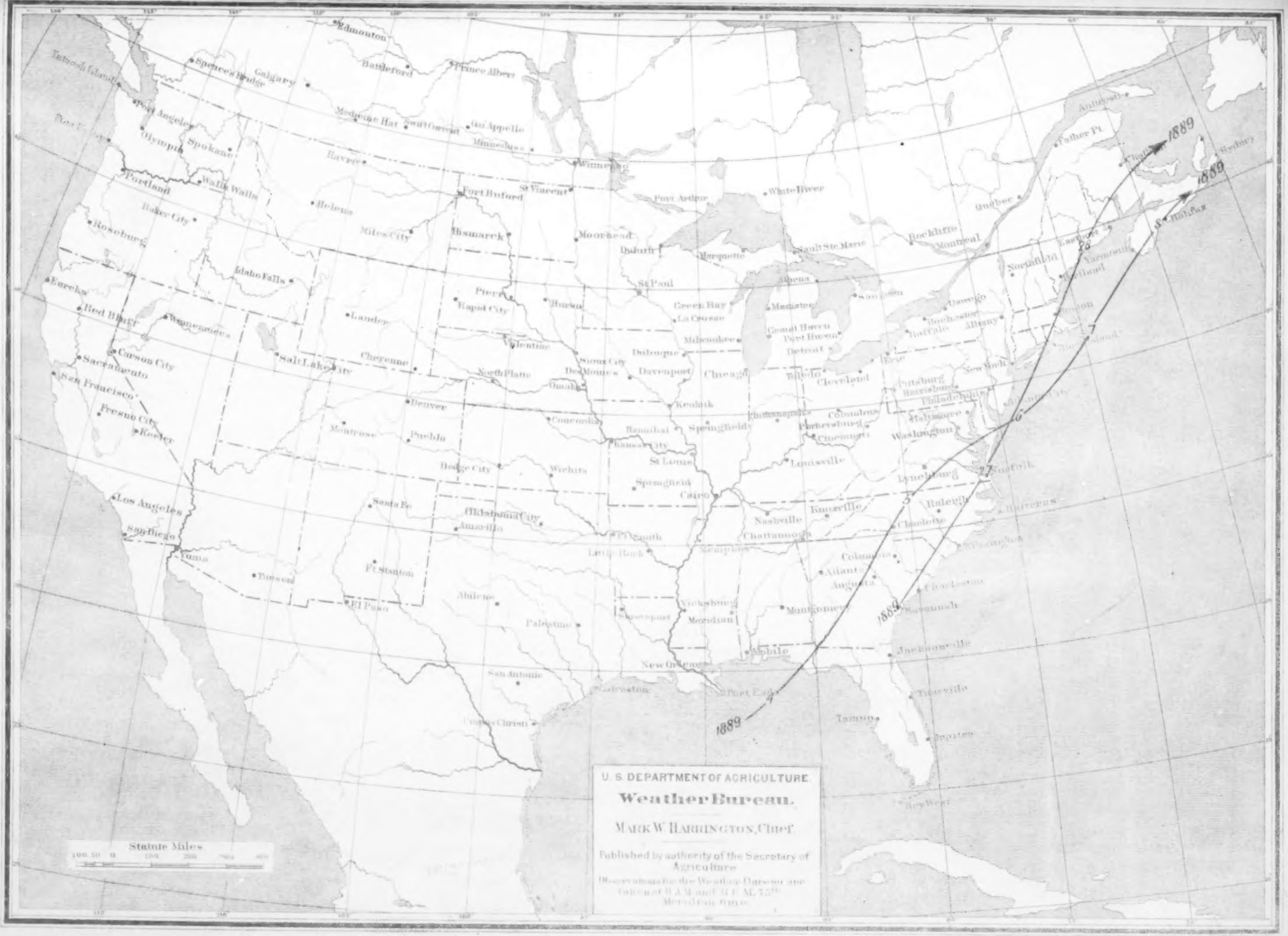


Chart 8.

South Pacific Coast.

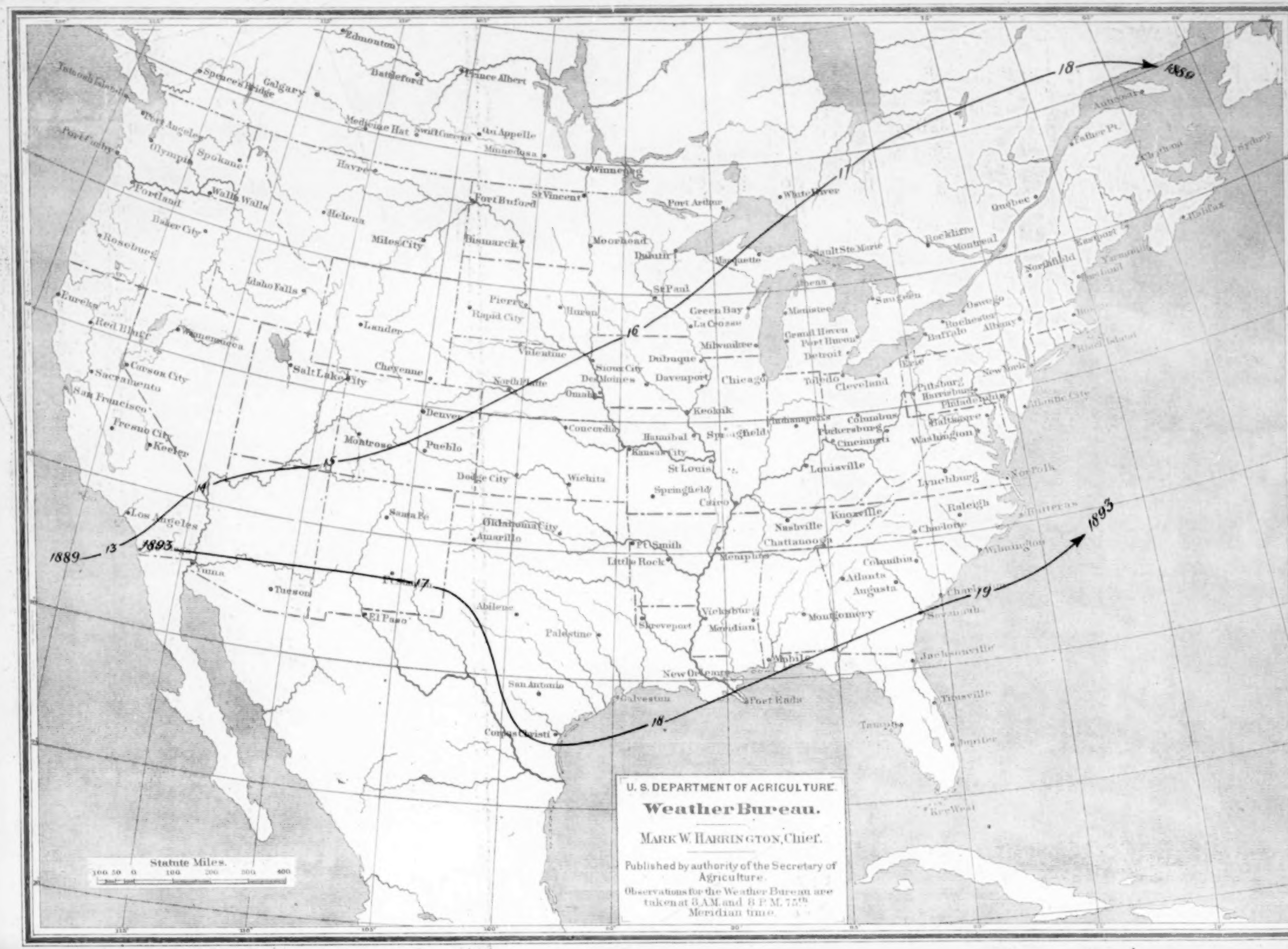


Chart 9.

January 13, 1893—8 a. m.

Chart 9.

January 13, 1893—8 a. m.

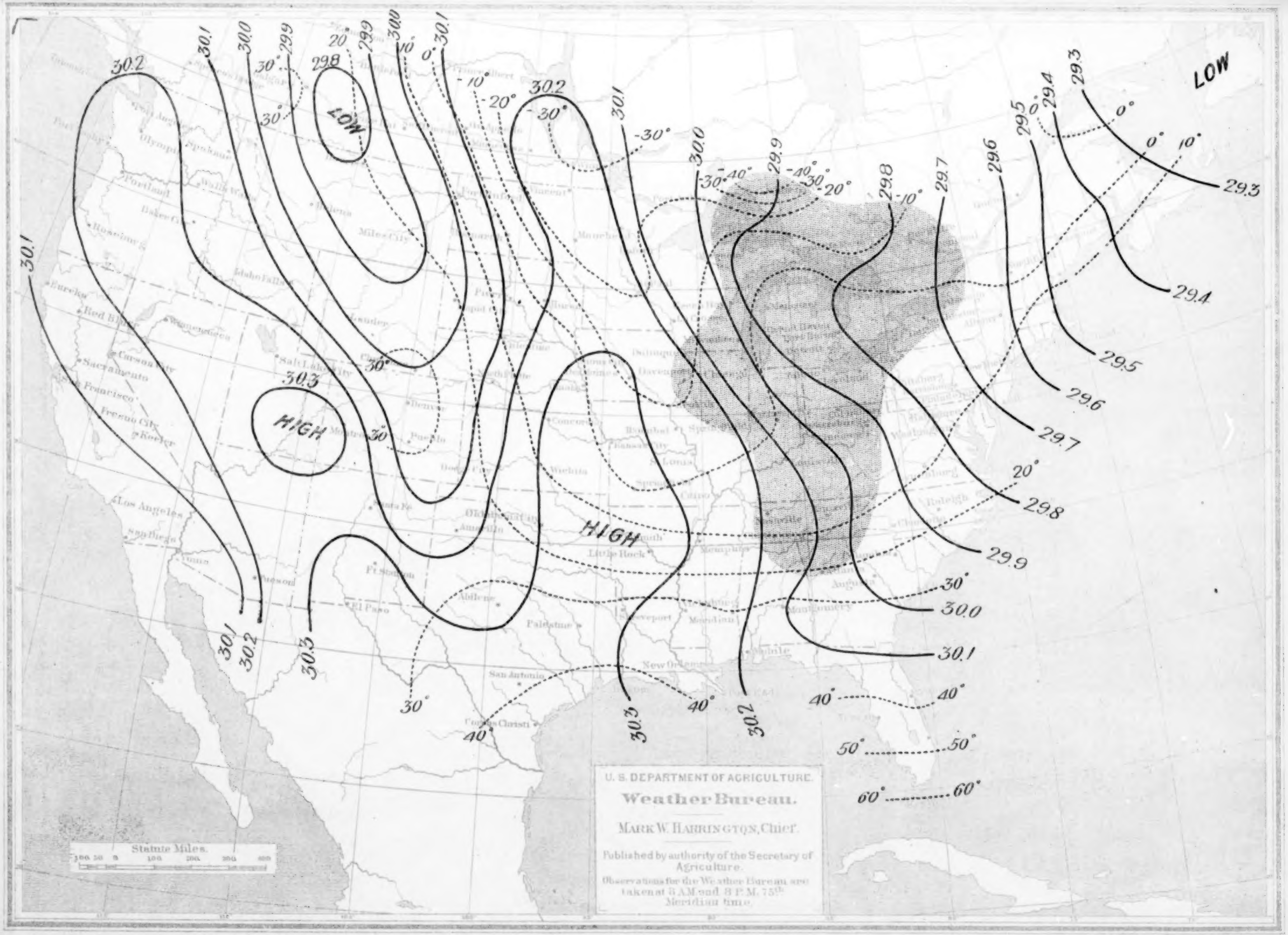


Chart 10.

January 14, 1893—8 a. m.

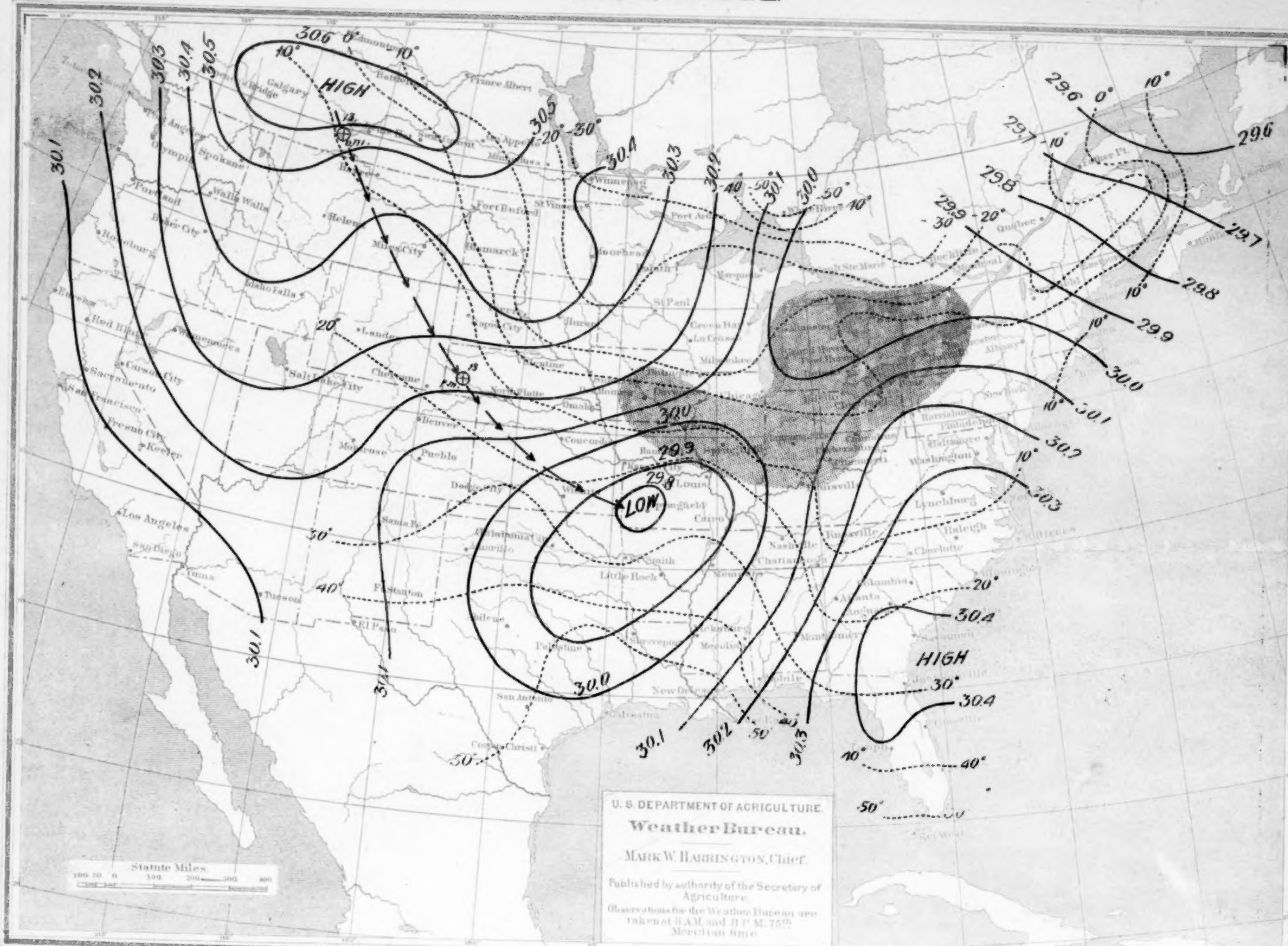


Chart 11.

January 15, 1892—8 a. m.

Chart 11. January 15, 1892—8 a. m.

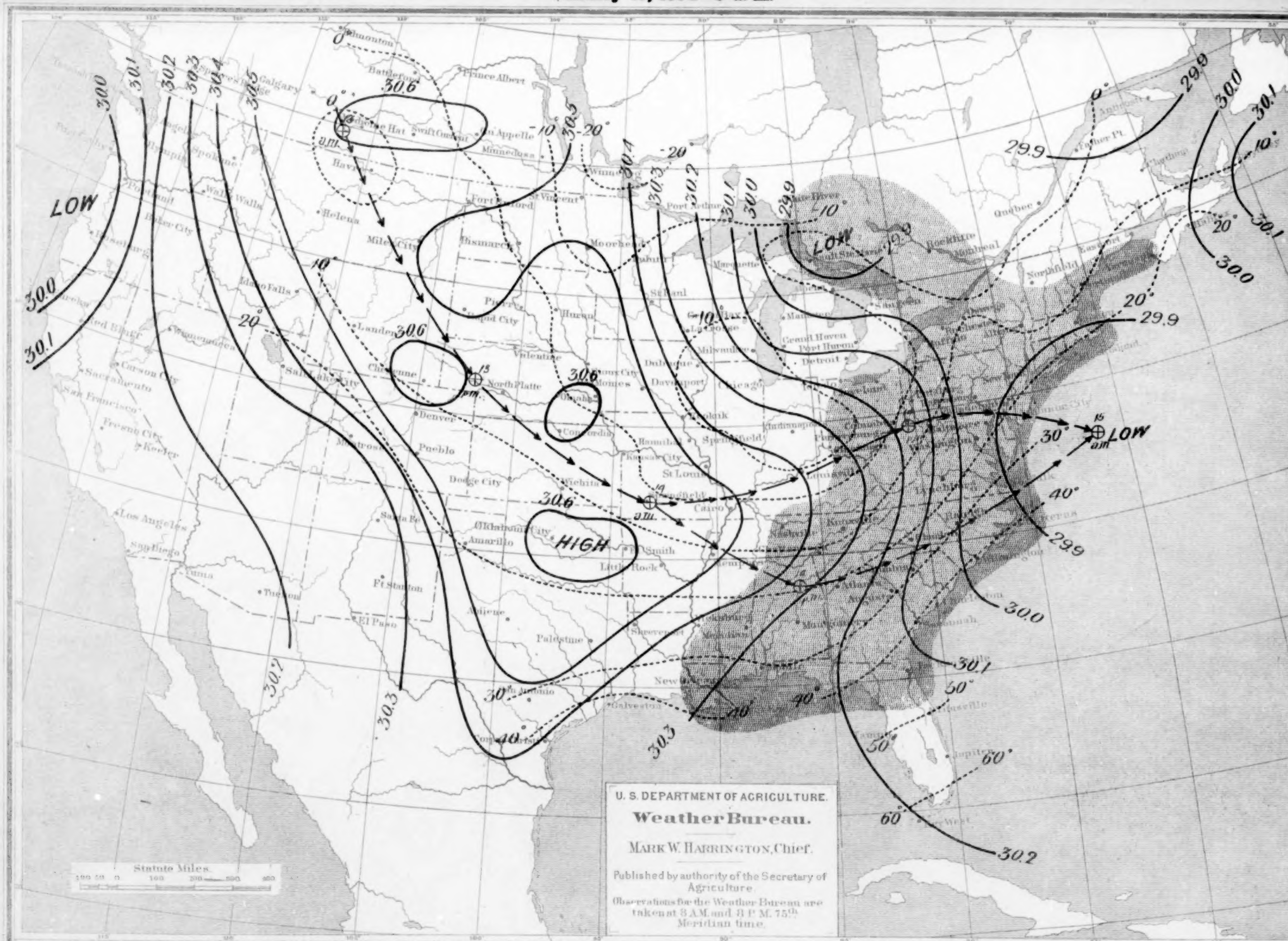


Chart 12.

January 20, 1892—8 a. m.

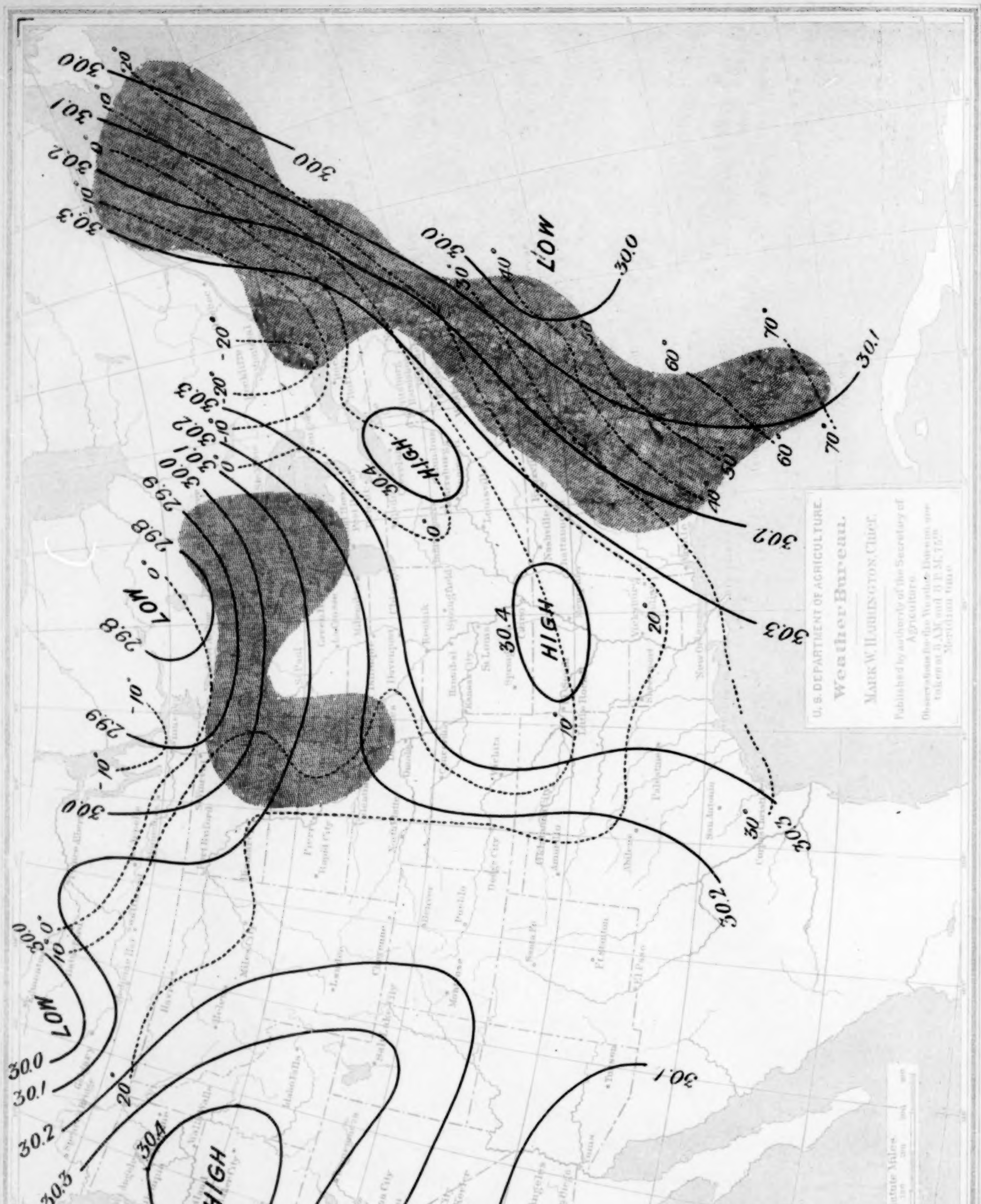
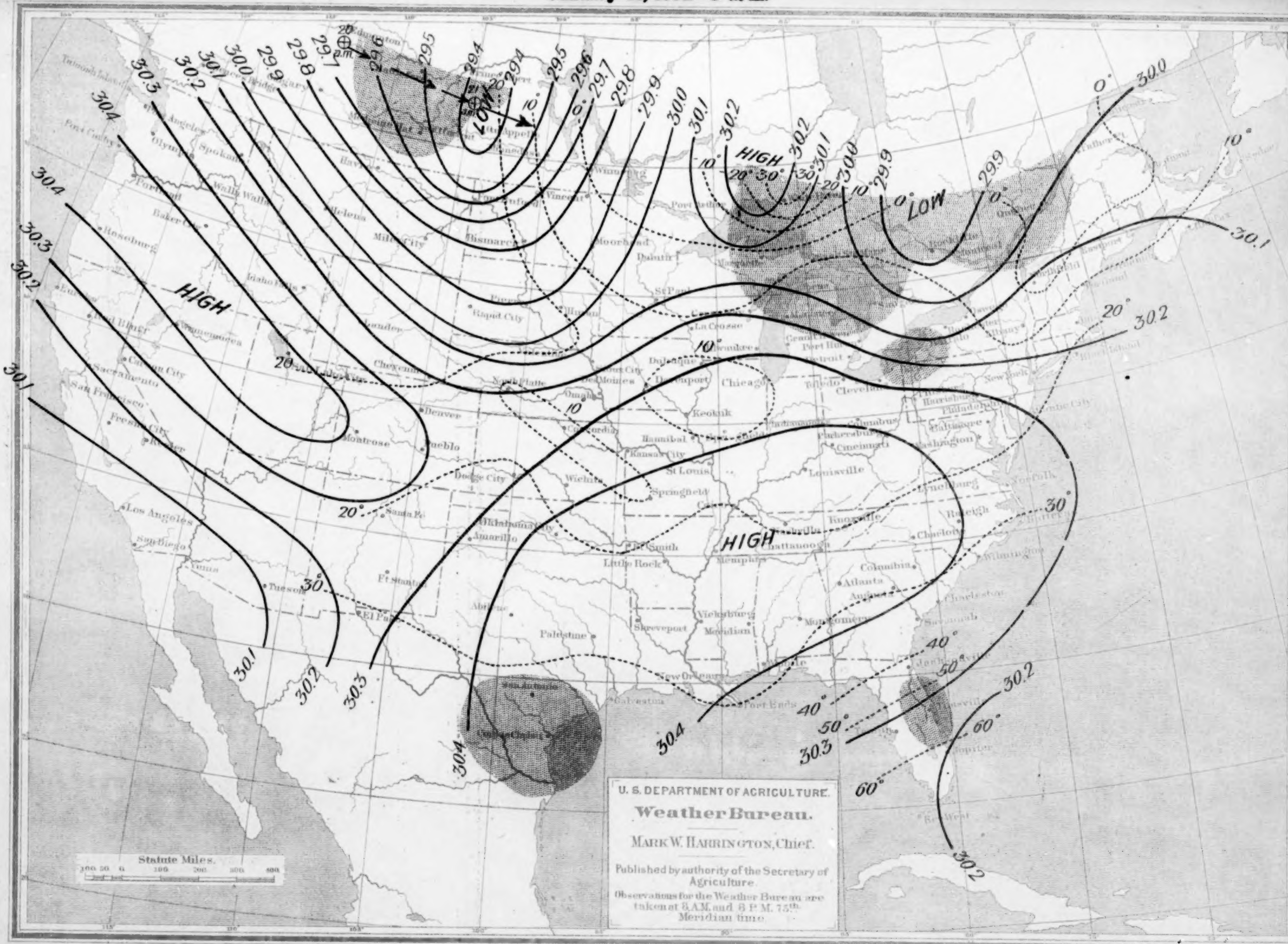


Chart 13. January 21, 1892—8 a. m.



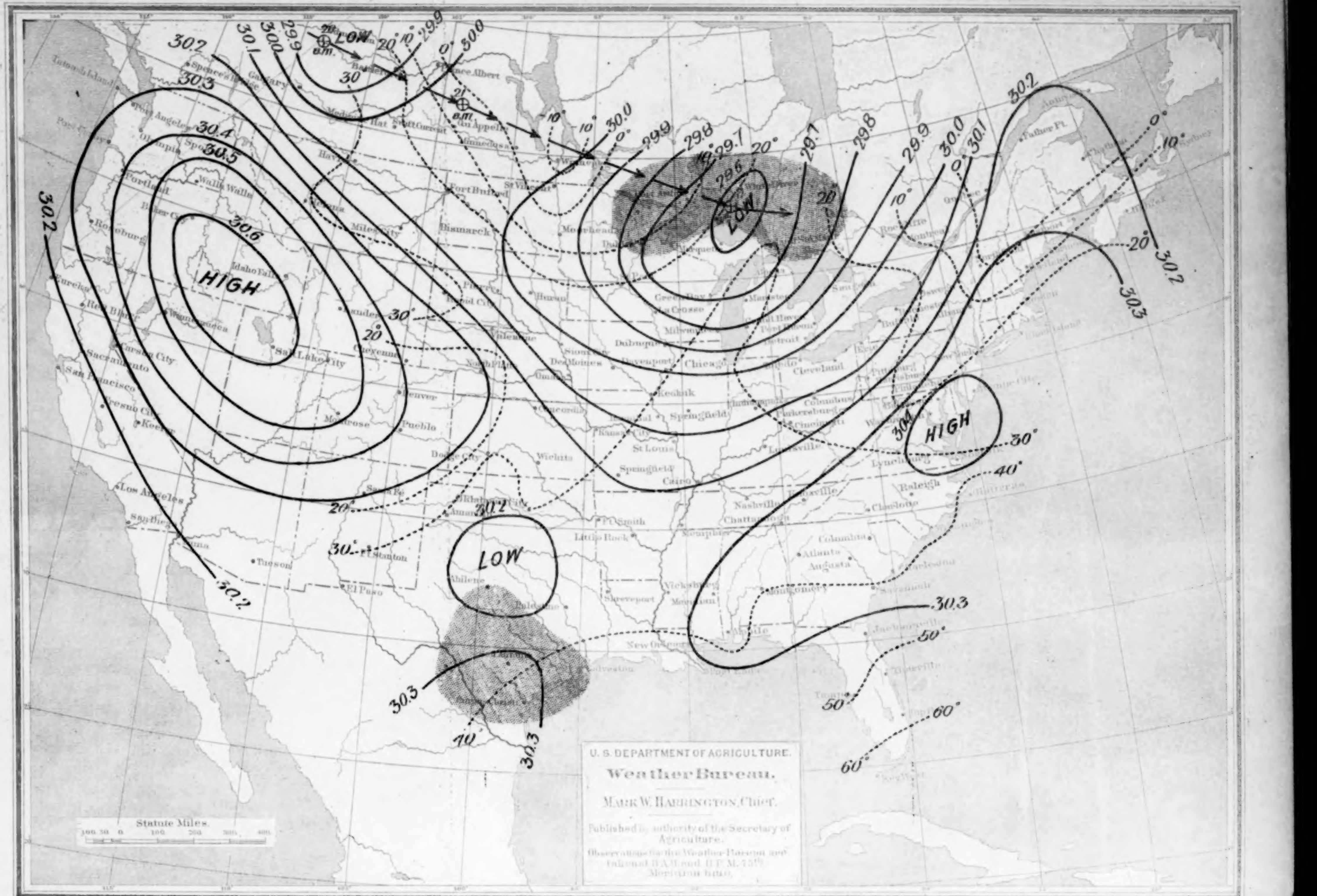


Chart 15. January 23, 1892—8 a. m.

January 23, 1892—8 a. m.

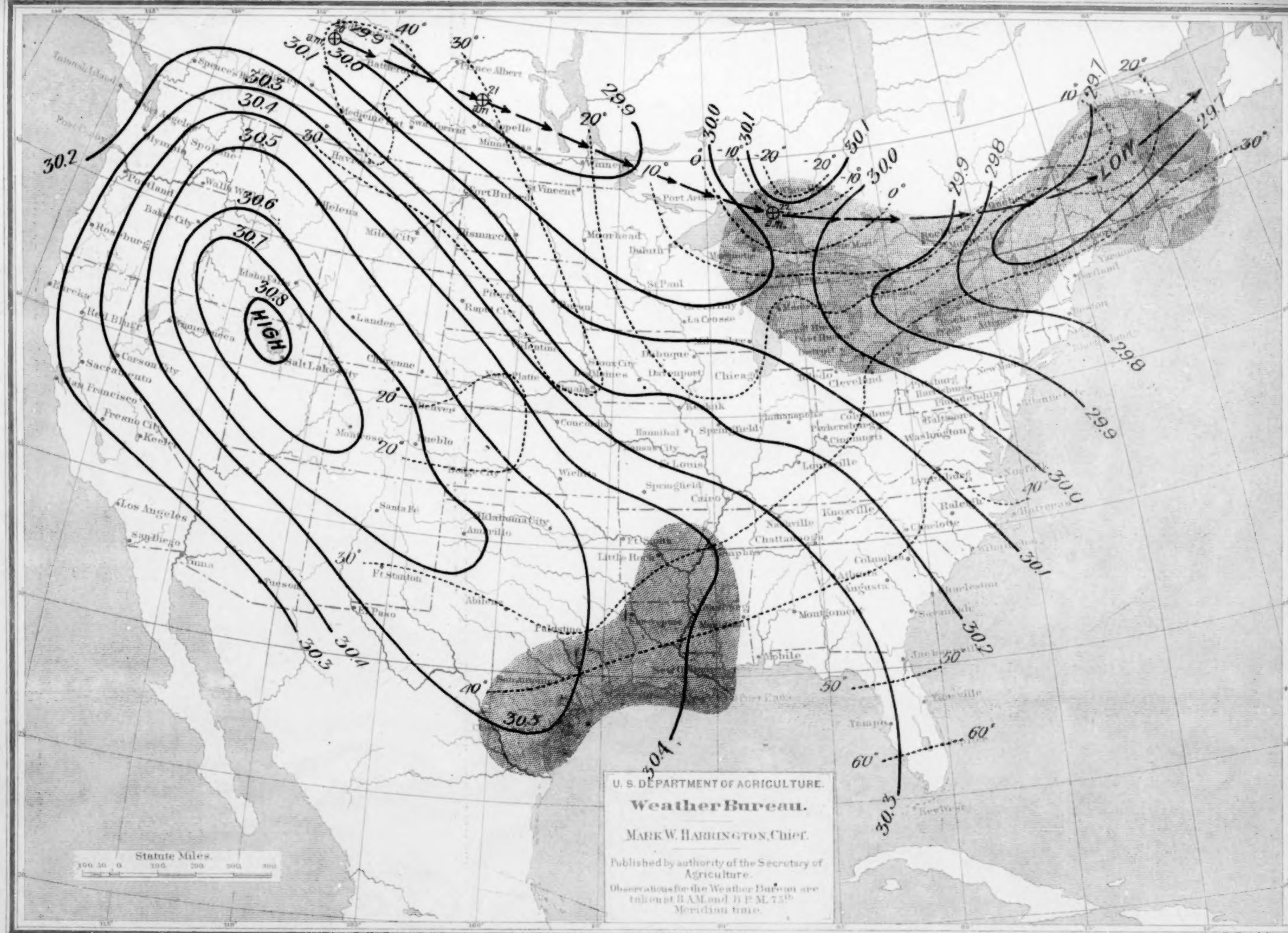


Chart 16.

January 8, 1889—8 a. m.

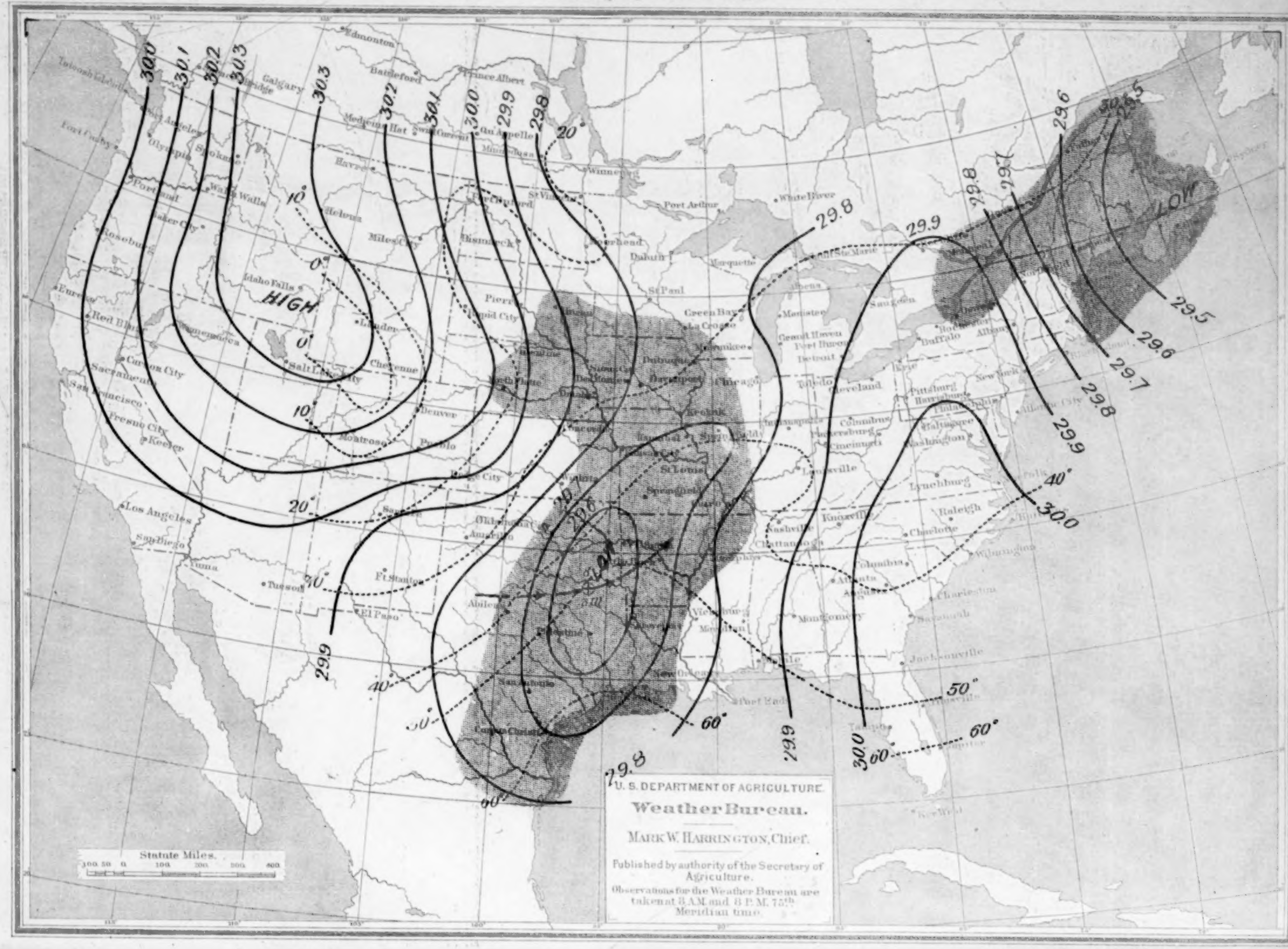


Chart 17.

January 9, 1889—8 a. m.

Chart 17.

January 9, 1889—8 a. m.

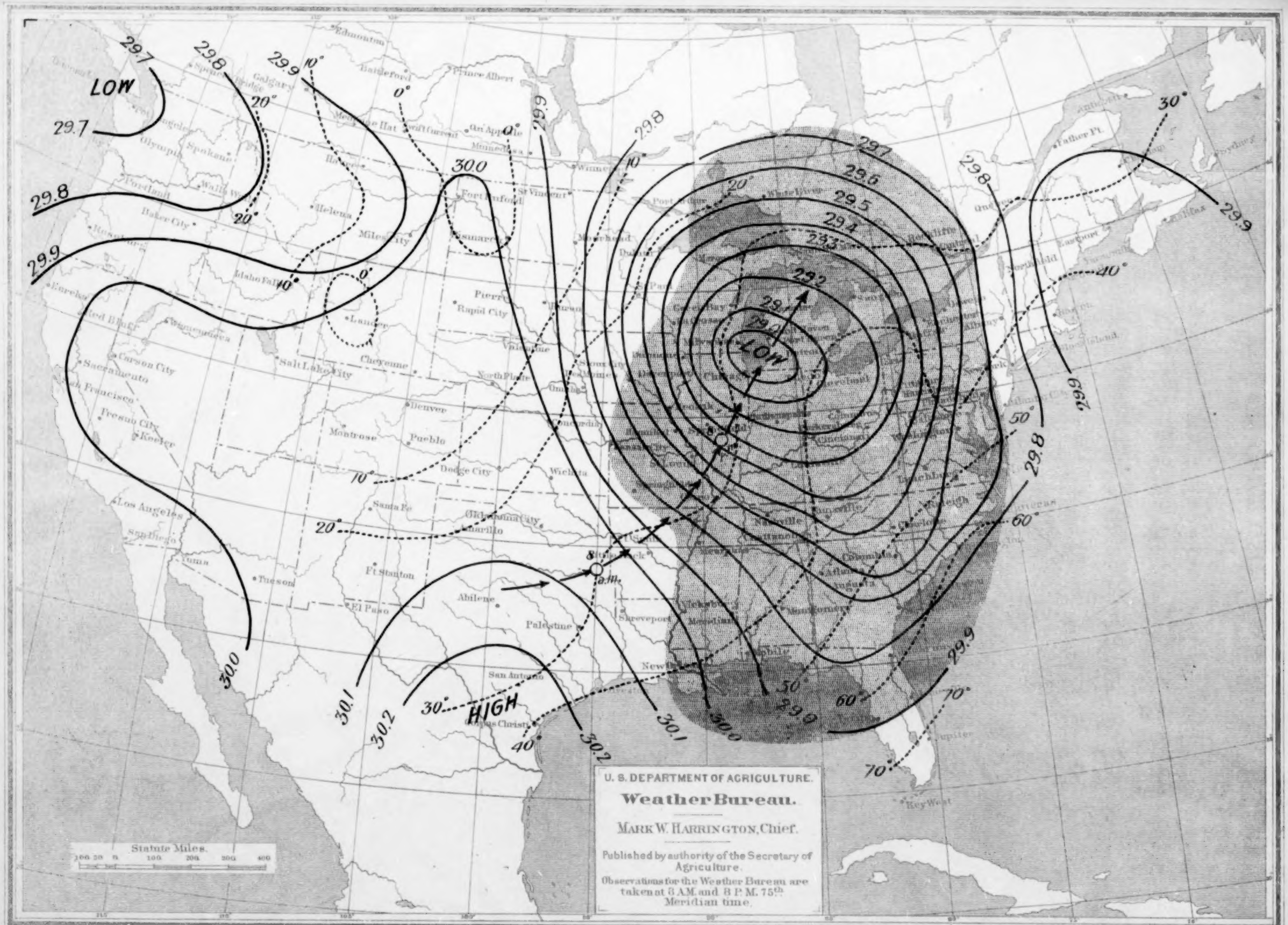


Chart 18. January 10, 1889—8 a. m.

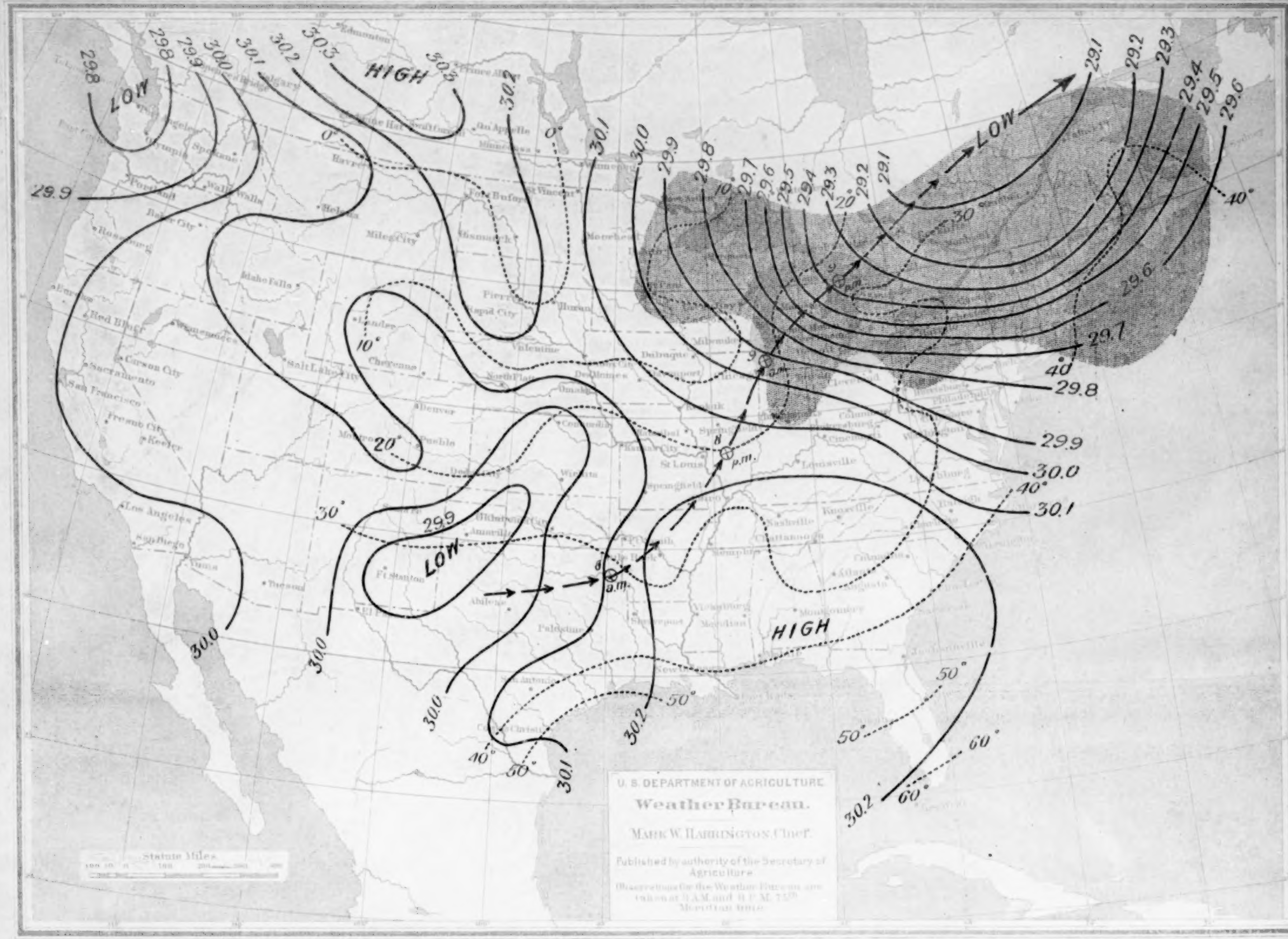


Chart 19. January 26, 1889—8 a. m.

Chart 19.

January 26, 1889—8 a. m.

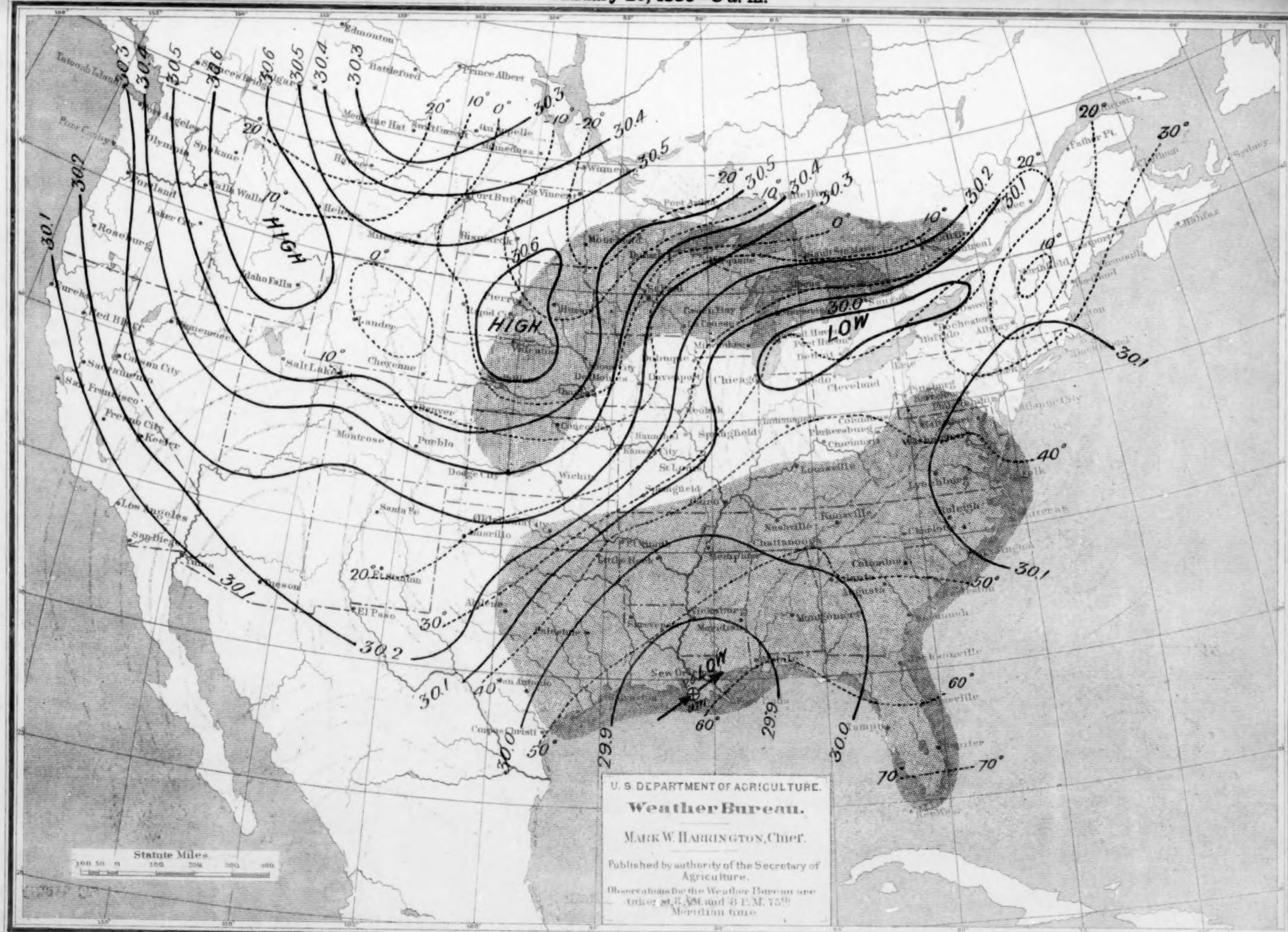


Chart 20. January 27, 1889—8 a. m.

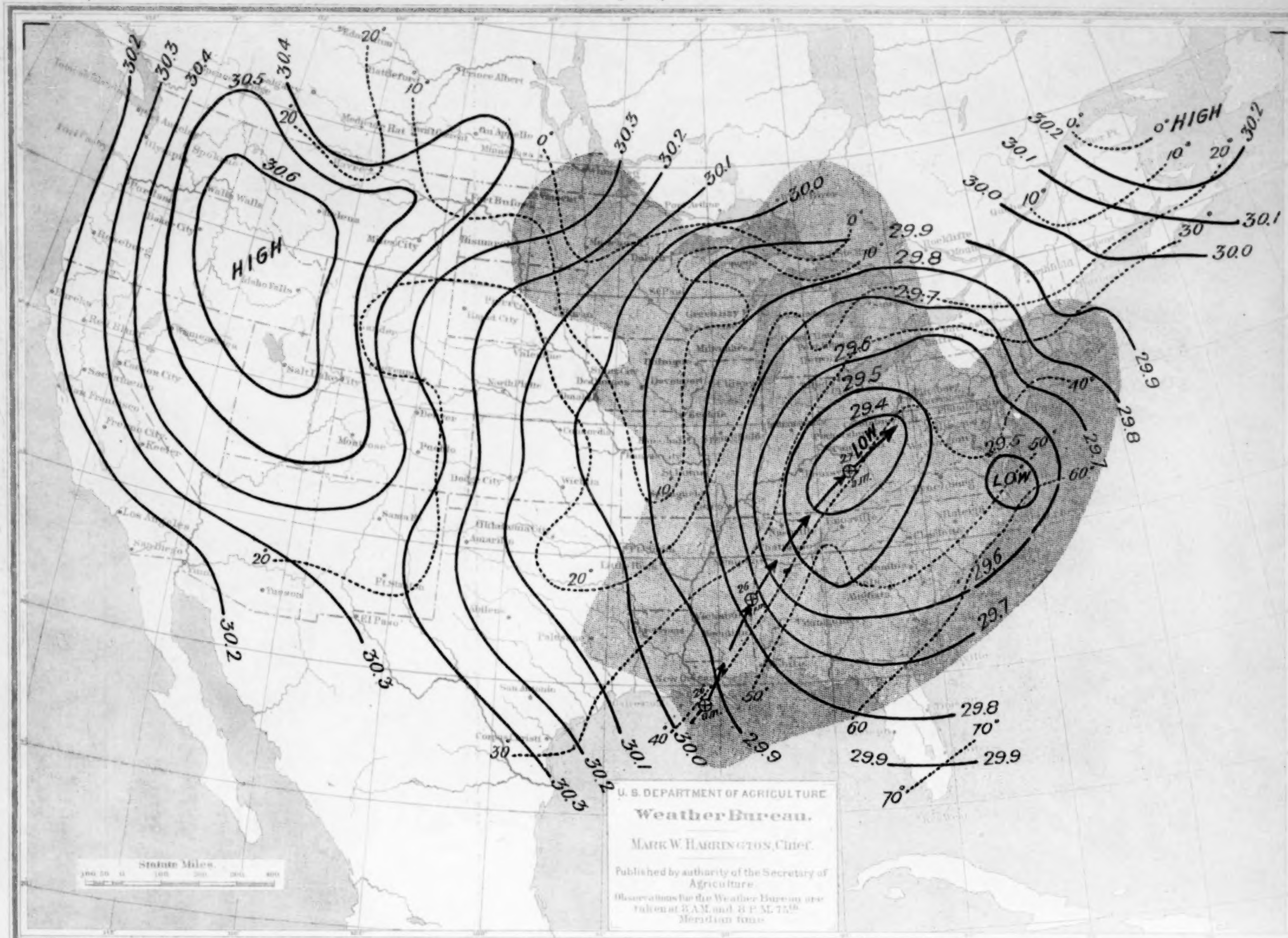


Chart 21. January 28, 1889—8 a. m.

Chart 21. January 28, 1889—8 a. m.

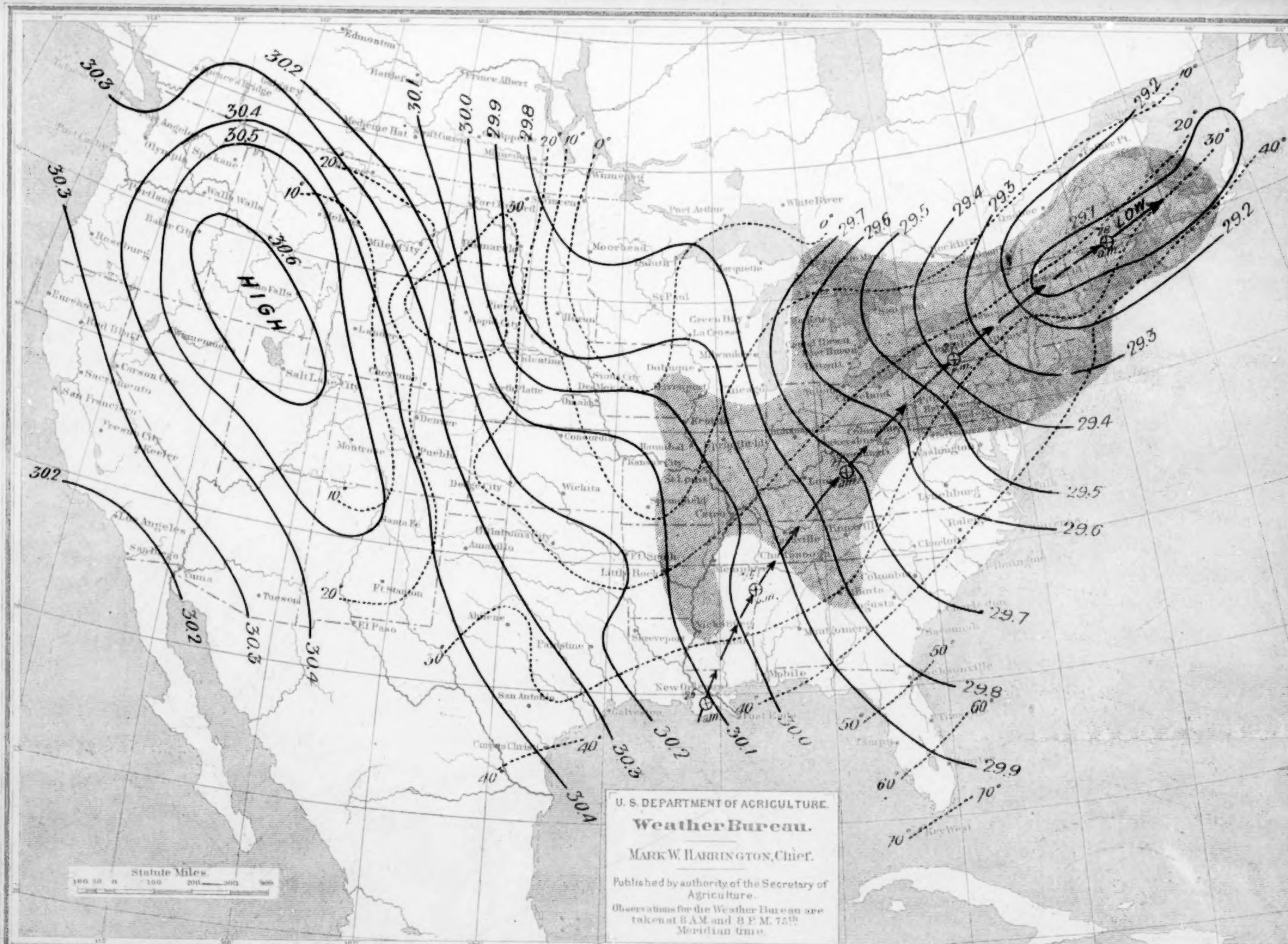


Chart 22. January 23, 1891—8 a. m.

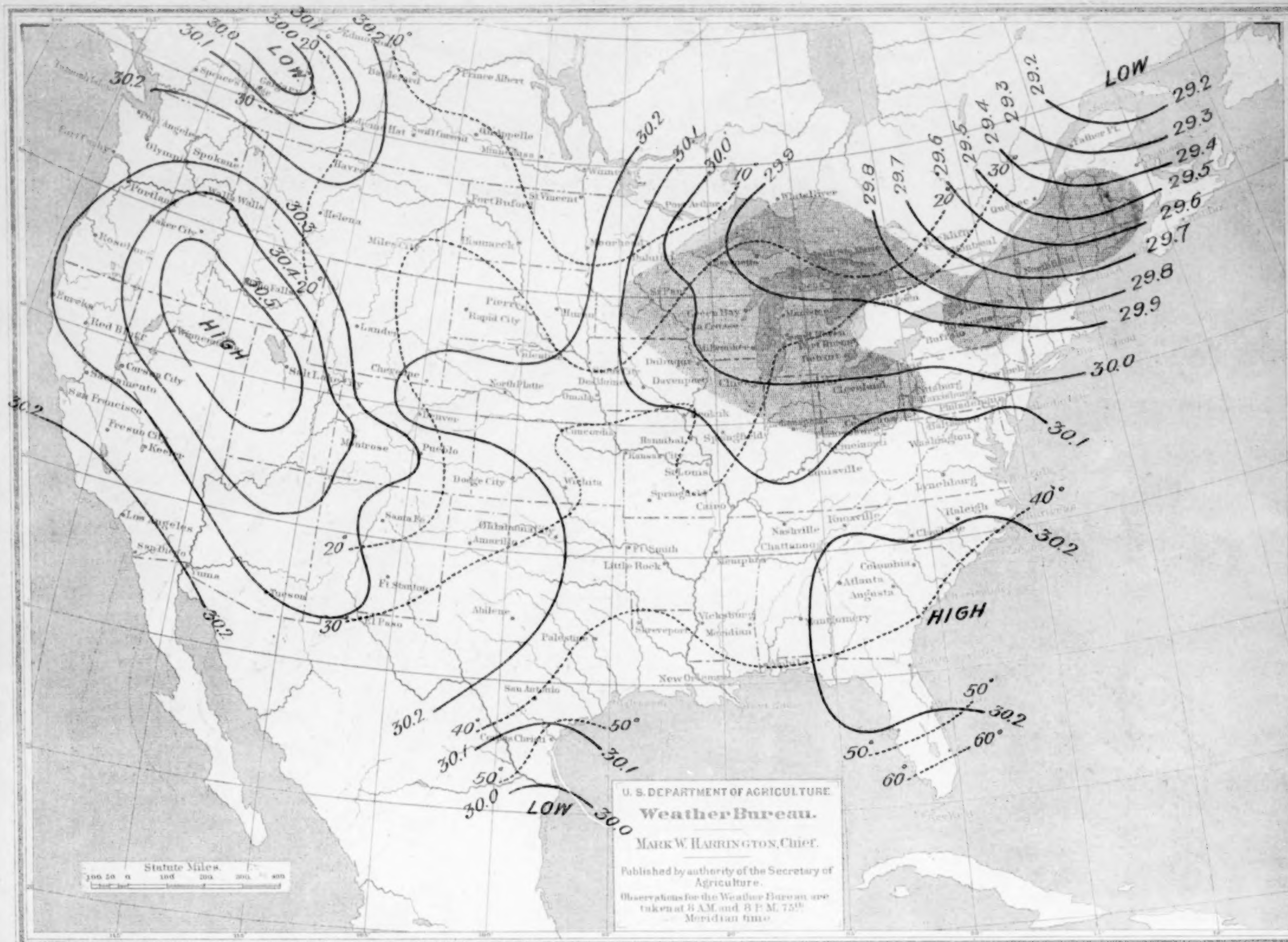


Chart 23. January 24, 1891—8 a. m.

January 24, 1891—8 a. m.

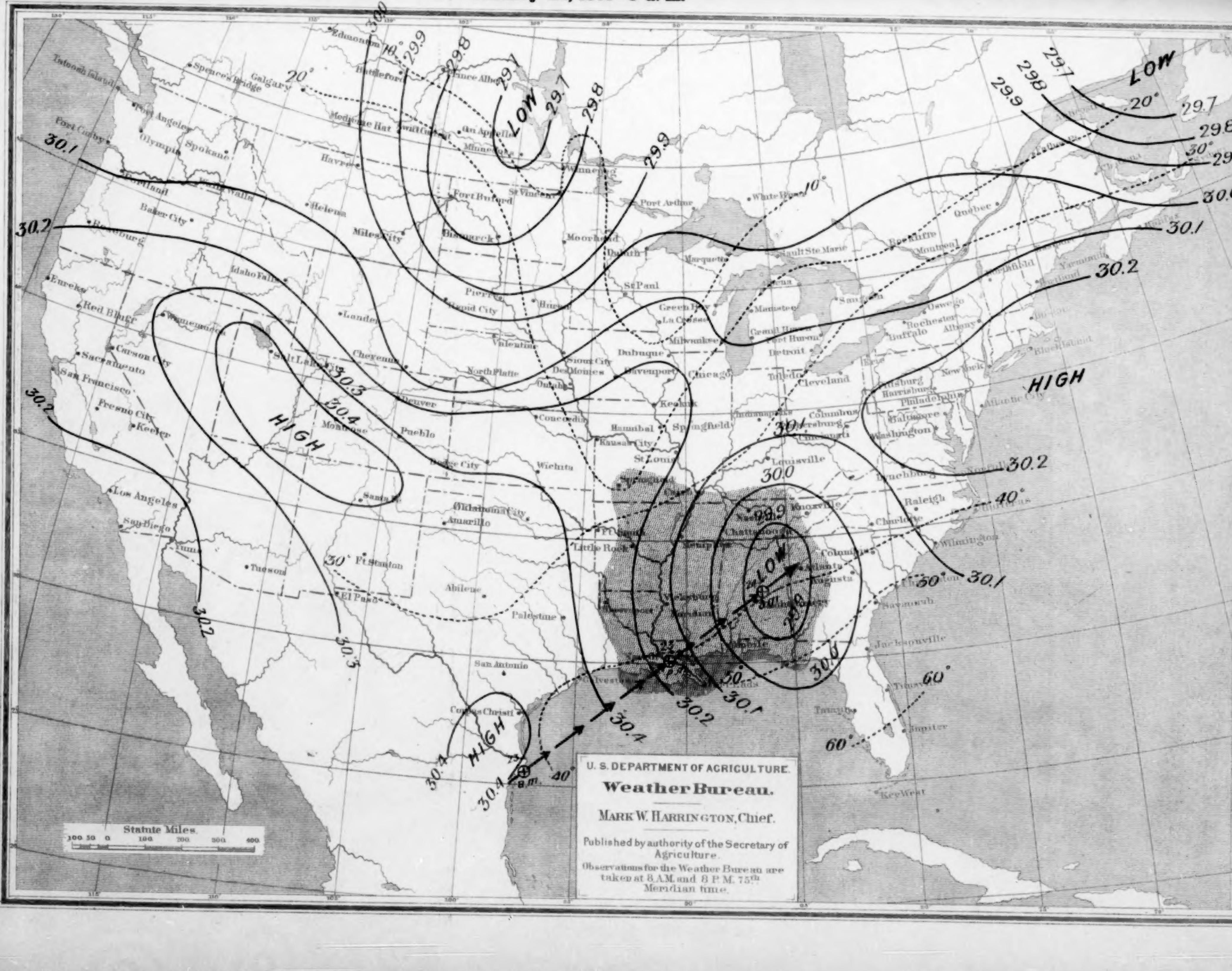


Chart 24.

January 25, 1891—8 a. m.

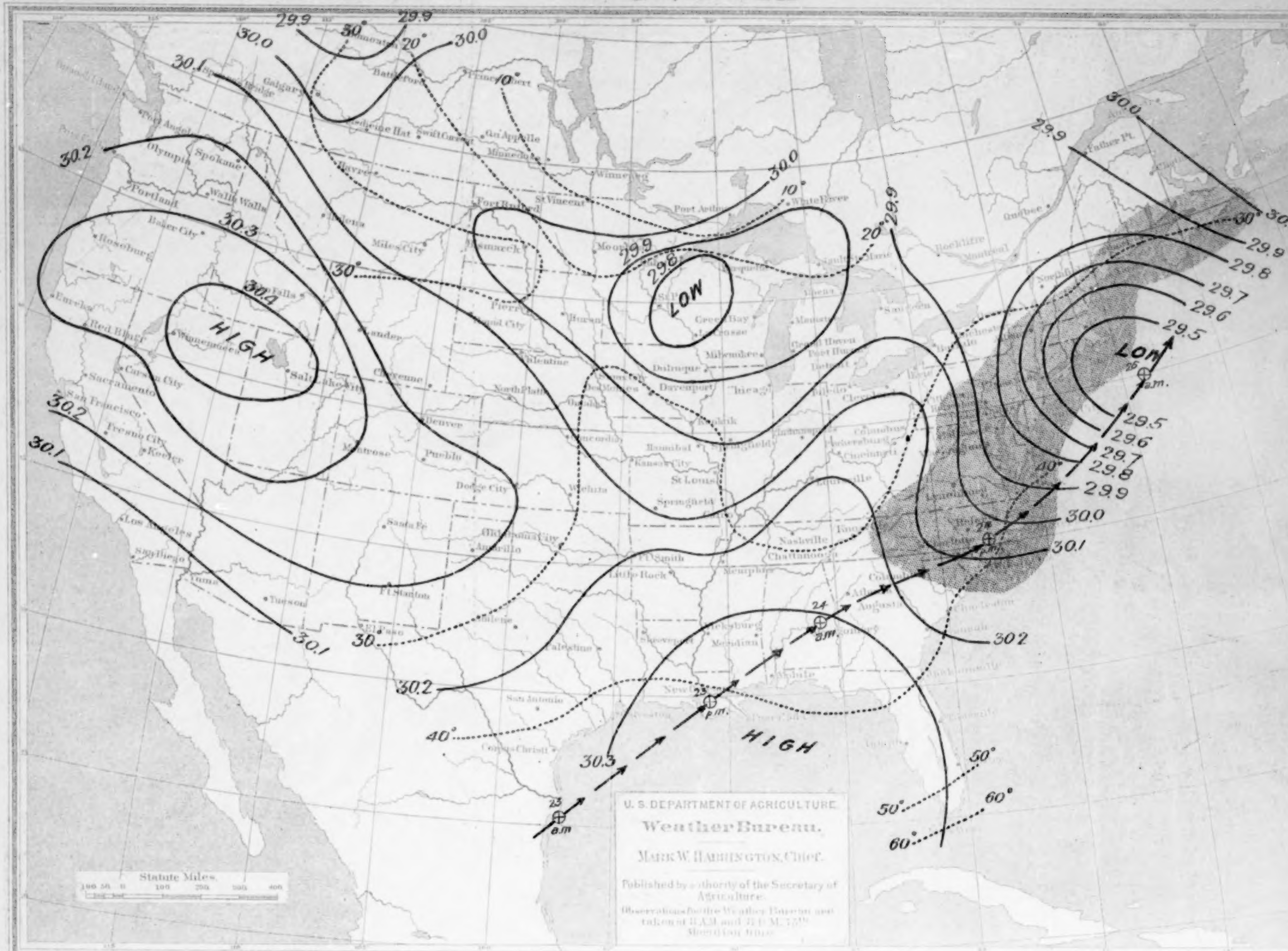


Chart 25.

Chart 25.

Principal Types of January Storms.